

(29,839)

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1923

No. 529

THE SANITARY DISTRICT OF CHICAGO, APPELLANT,

vs.

THE UNITED STATES OF AMERICA

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR
THE NORTHERN DISTRICT OF ILLINOIS

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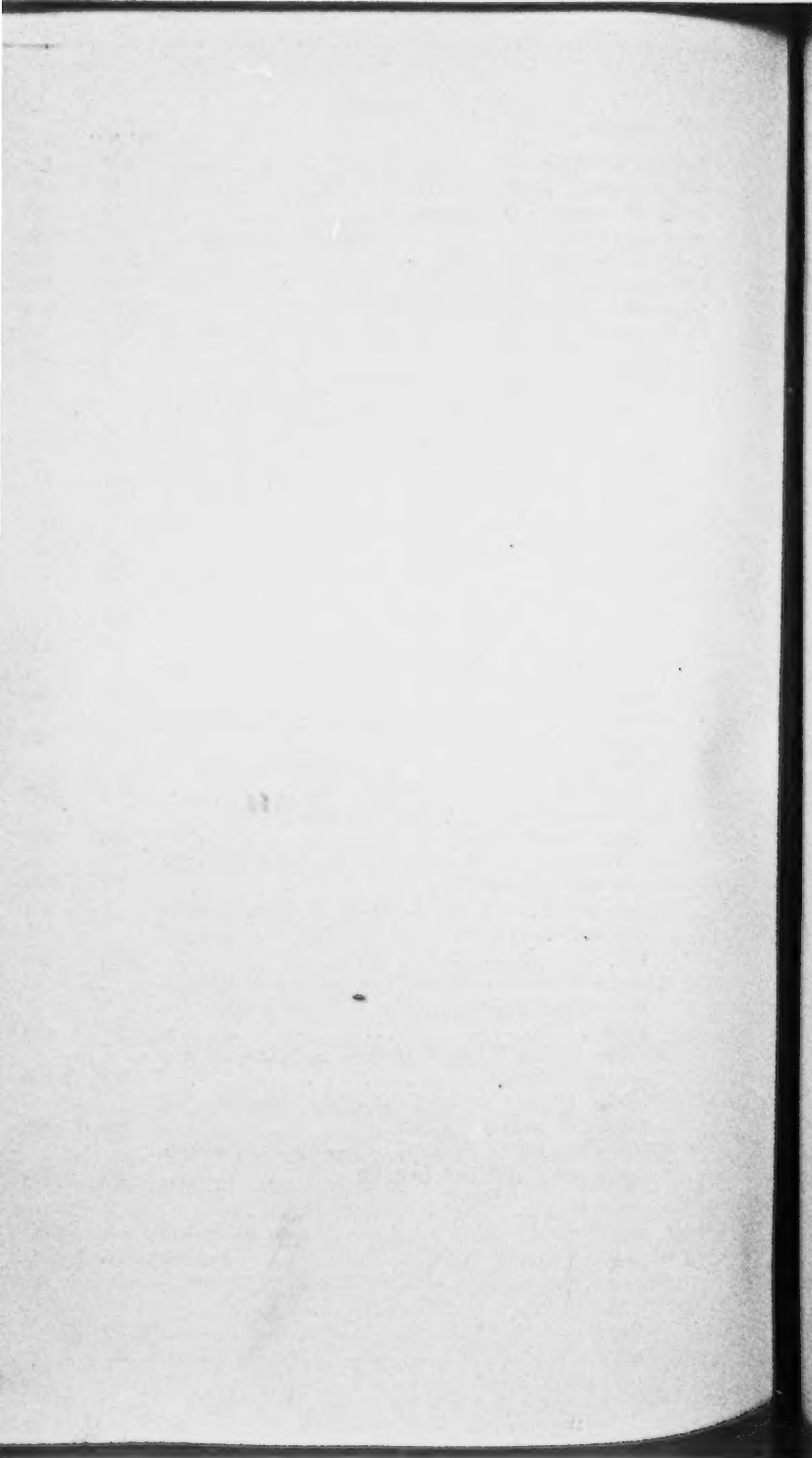
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[fols. a & b]

[Caption omitted]

[fol. c]

IN THE

**CIRCUIT COURT OF THE UNITED STATES, NORTHERN
DISTRICT OF ILLINOIS, EASTERN DIVISION**

No. 29019

THE UNITED STATES OF AMERICA

vs.

THE SANITARY DISTRICT OF CHICAGO

BILL OF COMPLAINT—Filed March 23, 1908

[fol. 1]

[Title omitted]

To the Honorable the Judges of the Circuit Court of the United States for the Northern District of Illinois, Eastern Division, in Chancery Sitting:

Your, orator, the United States of America, by Charles J. Bonaparte, its Attorney General, and Edwin W. Sims, its attorney for the Northern District of Illinois, brings this, its bill of complaint, against The Sanitary District of Chicago, the defendant, and respectfully alleges and represents unto your honors as follows:

First. That the defendant, The Sanitary District of Chicago, is a municipal corporation organized and existing under and by virtue of an act of the Legislature of the State of Illinois, approved May 29, 1889, in force July 1, 1889, and entitled, "An Act to create Sanitary Districts and to remove obstructions in the Desplaines and Illinois Rivers," that it has its principal office in the City of Chicago, in the State of Illinois, and that it is a citizen of the State of Illinois.

Second. That the Main Calumet River, situated in, and flowing, in a northeasterly direction through, the County of Cook, in the said State of Illinois, and emptying into Lake Michigan at South Chicago, [fol. 2] in said county, is a navigable river for its entire length from Lake Michigan to where it is formed by the Little and Grand Calumet rivers; that the United States has appropriated and expended large sums of money in improving the navigability of said river and in improving the harbor at the mouth of the same, that is to say, it has appropriated and expended in such improvement of said river, including its tributaries in Indiana and Illinois, between the years 1884 and 1907 inclusive, the sum of \$994,218.98, and in the improvement of said harbor, since the year 1870, the sum of \$1,567,230; that at the present time the largest vessels on Lake Michigan can enter said harbor and pass up said river for a distance of five miles, and small vessels can ascend the remaining three miles; that the Little Calumet

River, which, between the mouth of Stoney Creek and the mouth of said river, flows through the said County of Cook in an easterly direction, and in conjunction with the Grand Calumet River, in said county, forms the said Calumet River, is also a navigable river from its mouth to the mouth of Stoney Creek, in said county; that for all of that distance it has a depth of about 6 feet and steamboats and sailing vessels engaged in state and interstate commerce use said river for said distance; that the bridges across said river for said distance are provided with draws for the accommodation of such craft, and such bridges are under the direct supervision of the Secretary of War of the said United States; that the Grand Calumet River, an interstate stream rising in the State of Indiana and flowing in a northwesterly direction into and through the State of Illinois, to the said point of its conjunction with the Little Calumet River, is also a [fol. 3] navigable river, and the said United States has expended large sums of money in improving its navigability; that Lake Michigan and its harbor and connecting rivers and channels are navigable waters of the said United States; and that the United States has appropriated and expended large sums of money in improving the navigability of the rivers, channels and harbors connected with said Lake Michigan.

Third. That on the seventh day of December, in the year 1904, the Board of Trustees of the said The Sanitary District of Chicago duly passed an ordinance, which was afterwards duly approved by its president and which still remains in full force and effect, establishing and laying out a route for a channel and outlet of The Sanitary District of Chicago, to be known as the Calumet-Sag Channel, which said ordinance directed that said channel be constructed by the said Sanitary District from a point in the main channel of the said Sanitary District at a place called Sag, about 11 miles in a northerly direction up the said main channel from Lockport, in the State of Illinois, to a point in said Little Calumet River, at the mouth of Stoney Creek aforesaid, near the City of Blue Island (thereby connecting the said Little Calumet River with the said main channel of the said Sanitary District); that said ordinance provided that said channel should be constructed to a width of 90 feet at the bottom, with vertical sides, where the same is constructed through rock, and to a width of 70 feet on the bottom, with side slope of 3 feet vertical to 5 feet horizontal, where the same is constructed through earth, and that said channel should be constructed to a depth and on a grade sufficient to insure 22 feet depth of water flow; that the construction and maintenance of said channel as provided for in and by the terms of said ordinance and as the defendant plans and proposes to construct and maintain the same, will result in reversing the flow of the said Little Calumet River and the said Calumet River in such a way as to make the water in those rivers flow out of Lake Michigan instead of into it, and as your orator is informed and believes, and so charges the fact to be, will result in diverting and abstracting from Lake Michigan a large quantity of water, to wit: 4,000 cubic feet of water per second and causing said water to flow through the said Calumet rivers into the said Calumet-Sag Channel,

through that channel into the main channel of said Sanitary District, and thence to the Desplaines, Illinois and Mississippi rivers, and on to the Gulf of Mexico.

Fourth. Your orator further represents, on information and belief, that such diversion and abstraction of the waters of Lake Michigan into the Mississippi River basin as aforesaid, will lower the level of the water in Lake Michigan, and thus diminish the navigable capacity and depth of the various rivers, channels and harbors connected therewith which have been deepened and improved at great expense under the authority of the Congress of the said United States. Such depths that the construction and maintenance of the said Calumet-Sag Channel and the diversion and abstraction of the proposed amount of water from Lake Michigan will have a tendency to undo and annul the orders of Congress as expressed in the various river and harbor acts appropriating funds for improving the harbors and channels connecting with Lake Michigan; that the construction and maintenance of the said Calumet-Sag Channel in [fol. 5] the manner that the defendant plans and proposes to construct and maintain the same, and the consequent and resultant diversion of the waters of Lake Michigan out of the Lake Michigan basin into the Mississippi basin as aforesaid, will alter and modify the condition and capacity of all the said harbors and of all the said channels (navigable waters of the said United States as aforesaid), and will impede, injure and obstruct navigation in many of said harbors and channels, and will create an obstruction to the navigable capacity of the last mentioned waters of the said United States.

Fifth. That the diversion of said water as herein above set forth and the creation of the said obstruction to the navigable capacity of the said navigable waters of the United States, as above described, by the defendant, has not been, and is not, affirmatively authorized by the Congress of the said United States, and has not been, and is not, authorized in any way by the said Congress.

Sixth. Your orator further represents, on information and belief, that the construction and maintenance of the said Calumet-Sag Channel, as the defendant plans and proposes to construct and maintain the same, will lower the levels of the water in the said Calumet, Little Calumet and Grand Calumet rivers, and will alter and modify the course, condition and capacity of those rivers respectively.

Seventh. Your orator further avers on information and belief, that the construction and maintenance of the said proposed Calumet-Sag Channel, as planned and proposed by the defendant, and its [fol. 6] consequent diversion of the waters of Lake Michigan out of the Lake Michigan basin into the Mississippi River basin as aforesaid, will lower the levels of the waters of said Lake Michigan and will injure and impede navigation in all of the harbors and channels in said waters.

Eighth. That in and by Section 10 of an act of Congress, approved March 3, 1899, and entitled, "An Act making appropriations

for the construction, repair and preservation of certain public works on rivers and harbors, and for other purposes," it is provided as follows:

"That the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is hereby prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river or other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of War; and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of any port, roadstead, haven, harbor, canal, lake, harbor of refuge, or inclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to the beginning of same";

which said law has remained and been in full force and effect ever since its passage and still remains in full force and effect.

Ninth. That heretofore, to wit, on or about the twenty-eighth day [fol. 7] of November, in the year 1906, the defendant made application to the Secretary of War of the said United States, for authority to construct and maintain the said Calumet-Sag Channel, as above described, and to reverse the flow of the said Calumet rivers, as above described; that thereafter the said Secretary of War requested the Chief of Engineers of the said United States to make his recommendation concerning the said application, and that thereupon, to wit, on the twenty-third day of February, in the year 1907, the said Chief of Engineers reported to the said Secretary of War that he was unwilling to recommend favorably the said proposed work; that thereafter, to wit, on the fourteenth day of March, in the year 1907, the said Secretary of War denied the said application and refused to authorize the said proposed work; and that up to the present time, to wit, the time of the filing of this bill of complaint, the said proposed work has not been recommended by the said Chief of Engineers and has not been authorized by the said Secretary of War, and still remains and is wholly without the recommendation, permission or approval of the said Chief of Engineers and still remains and is wholly without the authority, permission or approval of the said Secretary of War.

Tenth. That the defendant has announced its intention to construct and maintain the said proposed Calumet-Sag Channel, to reverse the flow of the said Calumet River and the said Little Calumet River as aforesaid, and to divert and abstract waters from Lake Michigan as aforesaid, notwithstanding the refusal of the said Chief of Engineers to recommend the same, and notwithstanding the re-

[fol. 8] fusals of the said Secretary of War to authorize the same, unless restrained by a court having jurisdiction to restrain said action, and to that end its Board of Trustees, on the eighteenth day of September, in the year 1907, adopted and passed an order, which is still in full force and effect, and a true copy of which is hereto appended, marked Exhibit "A," and made a part hereof.

Eleventh. Your orator further represents, upon information and belief, that the defendant desires, proposes and intends to divert the waters of Lake Michigan as aforesaid, through the said Calumet rivers and the Calumet-Sag Channel as aforesaid, for sanitary purposes and for the development of valuable water power which it proposes to sell; that the Congress of the United States has not fixed any amount of such waters for such proposed diversion, and has not provided for the diversion of any of such waters through the said Calumet rivers and the said Calumet-Sag Channel, and that the Secretary of War of the United States, under the direction of Congress, or in any other way, has not fixed any amount of such waters for such proposed diversion, but, on the contrary, has refused so to do, and has refused to authorize the diversion of any of such waters through said rivers and said channel.

Twelfth. Your orator further represents that the defendant cannot lawfully construct or maintain the said proposed Calumet-Sag Channel as above described, cannot lawfully reverse the flow of the said Calumet rivers as it plans and proposes to do as aforesaid, and cannot lawfully divert and abstract the waters of Lake Michigan as it plans and proposes to do as aforesaid.

[fol. 9] Thirteenth. That the defendant, on the sixteenth day of October, 1907, actually began the excavation of the said proposed Calumet-Sag Channel, at the westerly end of the same, with a force of men under the supervision of one William M. McCartney, its assistant engineer, and your orator is informed and believes, and so charges the facts to be, that the defendant intends to, and will, continue and complete the construction of said channel, reverse the flow of the said Little Calumet and the said Calumet rivers as aforesaid, and divert and abstract the waters of Lake Michigan as aforesaid, and maintain said channel as aforesaid, to the manifest and irreparable injury of your orator and its interstate navigation and commerce, unless restrained by the injunction of this honorable court.

Forasmuch, therefore, as your orator is remediless in the premises by the rules of the common law, and can have adequate relief only in a court of equity, and to the end that the said The Sanitary District of Chicago, a municipal corporation as aforesaid, which is made defendant to this your orator's bill of complaint, may full, true and perfect answer make to all and singular the matters and things hereinbefore stated and charged, but not under oath, its answer under oath being hereby expressly waived, your orator files this bill of complaint and prays your honors forthwith to grant a provisional

or preliminary writ of injunction directed to the said defendant, its Board of Trustees, officers, agents, attorneys, representatives, employes and servants, and all other persons, acting, or claiming or assuming to act, under its authority, enjoining it, and each of its Board of Trustees, officers, agents, attorneys, representatives, employes and servants, and each of the other persons aforesaid, from constructing, and from beginning or attempting to construct, and from continuing the construction of, and from doing anything in, towards, or about the construction of the said proposed Calumet-Sag Channel, and from constructing, and from beginning and attempting to construct, and from continuing the construction of, and from doing anything in, towards, or about the construction of, any channel, canal, ditch or drain, connecting the main channel of the Sanitary District of Chicago and with the said Little Calumet or with the said Calumet River or with Lake Michigan, of such a kind and character as to reverse the flow of said rivers or to divert or abstract any waters from Lake Michigan, and from doing or attempting anything in any way to connect the waters of the said Calumet rivers with the main channel of the said Sanitary District, and from doing or attempting anything in any way to reverse the flow of the said Calumet rivers, and from doing or attempting anything in any way to divert or abstract any waters from Lake Michigan in any channel other than the Chicago River as already authorized by the said Secretary of War, unless, prior to beginning any of said work, or doing or attempting to do any of such things, the Chief of Engineers of the said United States shall have recommended, and the Secretary of War of the said United States shall have authorized, the doing of such work, until such time as your honors shall appoint and direct for the final hearing herein, and upon such final hearing to make such injunction perpetual.

And may it please your honors to grant such other, further and [fol. 11] different relief in the premises as equity may require, and to your honors may seem meet.

And your orator prays that a writ of subpoena may issue to the said defendant. The Sanitary District of Chicago, commanding it, under a penalty and at a time and place to be therein stated, to appear and answer all and singular the matters hereinbefore stated and charged, and abide by and perform such orders as the court may make in the premises.

And your orator will ever pray.

Charles J. Bonaparte, Attorney General of the United States;
By Direction of the Attorney General: Edwin W. Sims,
United States Attorney for the Northern District of Illinois;
James H. Wilkerson, Special Assistant United States Attorney,
Solicitors for the United States.

[fol. 12] Jurat showing the foregoing was duly sworn to by W. H. Bixby omitted in printing.

[fol. 13]

EXHIBIT A TO BILL OF COMPLAINT

Whereas, heretofore, to-wit: on the 7th day of December, A. D. 1904, by an ordinance duly passed by this Board and afterwards duly approved by its President, this Board established and laid out a route for a channel and outlet of the Sanitary District of Chicago, which channel was by said ordinance to be constructed and maintained, together with the necessary additions thereto, within the limits of said route, a map or plat of said route or right of way being attached to and made a part of said ordinance, entitled: "Sanitary District of Chicago, Ordinance Map for the right of way of the Calumet-Sag Channel from the westerly preserve line of the Illinois and Michigan Canal, in section 14, T. 37 N., R. 11, E. of the third principal meridian, to the north and south center line of section 32, T. 37 north, range 14, east of the third principal meridian," upon which said map or plat is shown the boundary line of the route for said channel, said boundary line being indicated in red on said plat and marked, "Ordinance Boundary Line," and

Whereas, By the terms of said ordinance it is provided that a channel be constructed by the Sanitary District of Chicago the center line of which shall begin at the center line of the main channel of the Sanitary District of Chicago, in section 14 township 37 north, range 11, east of the third principal meridian in Cook County, Illinois, at a point 707.55 feet, measured along the center line of said channel, distant from the westerly line of said section 14; running thence south 84 degrees east to the westerly reserve line of the [fol. 14] Illinois and Michigan Canal; thence along and upon the center line of the route established in and by the said ordinance; and

Whereas, The construction and maintenance of the channel provided for in and by the terms of said ordinance will result in diverting and reversing the flow of the Calumet river, a navigable stream now flowing into Lake Michigan, and,

Whereas, Heretofore, to wit, on November 28, A. D. 1906, this Board instructed its president to transmit to the Secretary of War an application for a permit to reverse the flow of said Calumet river and thereafter, to wit, on March 14, A. D. 1907, the Secretary of War communicated to this Board his refusal to issue such permit, and

Whereas, This Board is advised that it has the right and that it is its duty under the laws of the State of Illinois to construct its said channel and reverse the flow of said Calumet river, notwithstanding the refusal of the Secretary of War to issue a permit authorizing the same, for the purpose of furnishing the proper sanitary method of disposing of the sewage of the territory and inhabitants contiguous to the said proposed channel and within the corporate limits of the Sanitary District of Chicago, and unless restrained by a court having jurisdiction of the subject matter at the instance of the United States Government, and

Whereas, The Board of Trustees of the Sanitary District of Chicago deemed the construction of such channel and the reversal of the flow of said Calumet river necessary for the preservation of the health of a large number of persons residing within the limits of the [fol. 15] Sanitary District of Chicago; and that it is in duty bound under the law to proceed with the construction thereof, first giving notice of its intention so to do to the Secretary of War and to the Attorney General, that they may, if they see fit, take such steps as they think proper to protect the rights, if any, of the general government in the premises before the expenditure by the District of any considerable portion of the eight or ten millions of dollars necessary to construct the said channel, now, therefore, it is

Ordered, By the Board of Trustees of the Sanitary District of Chicago,

First. That the Finance Committee be, and it is hereby, instructed to forthwith negotiate for the purchase, upon such terms as said Finance Committee may deem just, of any and all property lying within said route for said channel, as described in the ordinance passed and adopted by this Board December 7, 1904, and that said Finance Committee, in the event it shall be unable to purchase any portion of said right of way, immediately instruct the Attorney of this District to institute proceedings in such court as he may deem proper for the condemnation of any of such property as said Finance Committee may be unable to purchase, or otherwise acquire, and,

Second. That the Chief Engineer be, and he is hereby instructed to forthwith prepare plans and specifications for the construction of said channel, according to the terms of the ordinance passed and adopted by this Board December 7, 1904, aforesaid, and that upon the acquirement of any property by the Finance Committee, as herein [fols. 16 & 17] directed, that the Chief Engineer be, and he is hereby instructed to install such machinery and employ such labor as may be necessary to immediately begin the construction of the said channel and secure the reversal of the flow of said Calumet river, and,

Third. That the Clerk of this District be, and he is hereby, instructed to transmit a certified copy of this preamble and order, together with a certified copy of the ordinance of December 7, 1904, aforesaid, and of the "Ordinance Map" attached thereto, to the Secretary of War, to the Attorney General of the United States, to the Chief of Engineers of the United States Army, and to Lieut. Col. Wm. H. Bixby, District Engineer in charge of the Chicago District, at Chicago, Illinois, said copies to be transmitted by United States mail, and the said Clerk is directed to report to this Board the manner in which he shall have carried out the terms of this order.

[File endorsement omitted.]

[fol. 18] IN THE CIRCUIT COURT OF THE UNITED STATES

[Title omitted]

[fol. 19] THE ANSWER OF THE SANITARY DISTRICT OF CHICAGO, RESPONDENT, TO THE BILL OF COMPLAINT OF THE UNITED STATES OF AMERICA, COMPLAINANT—Filed March 23, 1908

This respondent, the Sanitary District of Chicago, now and at all times hereafter, saving and reserving unto itself all benefit and advantage of exception which can or may be had or taken to the many errors, uncertainties and other imperfections in said bill contained, for answer thereunto, or to so much and such parts thereof as this respondent is advised it is or are material or necessary for it to [fol. 20] make answer unto, answering says:

First. This defendant admits that it is a municipal corporation, organized and existing under and by virtue of the laws of the State of Illinois, as charged in the first paragraph of the bill of complaint herein. This defendant hereto attaches a map or plat, marked "Exhibit A," made a part hereof, which represents and shows the territorial boundaries of this defendant, within which there is comprised substantially 358 square miles; that within the boundaries of said District there are situated the following cities, villages and towns: Chicago, Evanston, Glencoe, Winnetka, Wilmette, Shermerville, Glenview, Morton Grove, Miles, Cicero, Stickney, Evergreen Park, Morgan Park, Blue Island, Riverdale, Dolton, Harvey, West Hammond, Worth, Bremen and Calumet; that the population of said District exceeds 2,000,000.

Second. This defendant admits that the Calumet river is a river situated in the County of Cook and State of Illinois, flowing northeasterly, substantially as charged in paragraph two of the bill of complaint; and this defendant will hereinafter more particularly describe said river and attach plats showing the exact location and direction of the same; but this defendant expressly denies that said Calumet river is a navigable river for its entire course, as charged in said bill of complaint, but, on the contrary, alleges that the length, depth and width of said stream throughout its length is substantially as is hereinafter more particularly set forth in the twenty-second paragraph hereof. This defendant admits the allegations in said [fol. 21] paragraph two contained as to the amount of moneys appropriated and expended by the Federal Government in the improvement of said river.

This defendant denies that the Little Calumet river from its mouth to the conjunction thereof with Stony Creek is a navigable river; but, on the contrary, alleges that said river between said points is of the dimensions and capacity hereinafter more fully set forth in the twenty-second paragraph hereof.

This defendant further denies that said portion of said Calumet river above mentioned is traversed by any vessels whatsoever engaged in either interstate or intrastate commerce.

This defendant denies that the Grand Calumet river from its origin in the State of Indiana to its confluence with the Little Calumet is a navigable river within the meaning of that term.

Third. This defendant admits that on, to-wit, the 7th day of December, 1904, the Board of Trustees of the Sanitary District of Chicago passed an ordinance laying out a right of way for, and providing for the construction of, a channel or waterway substantially as set forth in paragraph 3 of the bill of complaint, a copy of which said ordinance is hereto attached, marked "Exhibit G" and made a part hereof as fully as if set forth herein.

This defendant alleges that afterwards on, to-wit, the 22nd day of January, 1908, said Board of Trustees passed another ordinance extending the right of way adopted December 7th, 1904, in an easterly direction from the point where it joined with the Little Calumet river, as provided for in said original ordinance, to a point known [fol. 22] as the "Forks" and shown on "Exhibit F" hereto attached, as will more fully appear from a copy of said ordinance attached hereto, made a part hereof and marked "Exhibit H."

This defendant denies the allegations made in paragraph 3 of the bill of complaint herein: that the construction of said waterway or channel as proposed will result in diverting and abstracting from Lake Michigan four thousand cubic feet of water per second; but on the contrary alleges that the amount of water that will be diverted or abstracted from Lake Michigan by reason of the construction of said channel or waterway will be as hereinafter more fully set forth.

Fourth. This defendant expressly denies the allegation contained in paragraph 4 of the bill of complaint herein that the diversion and abstraction of the waters from Lake Michigan contemplated by this defendant through its proposed channel and waterway will lower the level of the waters of the Great Lakes and will diminish the navigable capacity of said waters or the harbors thereof.

This defendant expressly denies that interstate or any other commerce will be, to any extent, injured or interfered with by the said diversion and abstraction of waters from the Great Lakes, or by the construction and maintenance of the Calumet-Sag Channel; and denies that the construction of said channel will have a tendency to undo and annul the orders of Congress, as expressed in its various river and harbor bills, appropriating funds for improving the rivers and harbors; and expressly denies that the construction of said water- [fol. 23] way and channel will alter and modify the conditions of the rivers and harbors of the United States, or any of them, and substantially and seriously impede, injure and obstruct the navigation of the Great Lakes, and the harbors and channels thereof, or the rivers flowing thereinto, as alleged in said paragraph 4; but, on the contrary, the defendant alleges that the construction and maintenance of said waterway and channel as proposed, and the diversion of water through the same as proposed, will not in any wise effect the navigable capacity of the Great Lakes, or the harbors and channels connected therewith, or the rivers flowing into the same, and will not interfere with, or in any degree injure, interstate commerce, or any

other commerce; but, on the contrary, as hereinafter shown, will be to the interest of interstate commerce and in accordance with the policy and laws of the United States.

Fifth. This defendant expressly denies the allegation contained in paragraph 5 of said bill of complaint, that the construction of said proposed channel has not been affirmatively authorized by the Congress of the United States; but, on the contrary, this defendant alleges that the construction and maintenance of the channel and waterway, substantially as it is proposed to be constructed, is expressly and affirmatively authorized and provided for by the statutes of the United States.

Sixth. This defendant denies the allegation in paragraph 6 of the bill of complaint, that the construction and maintenance of said proposed waterway will lower the level of the Little Calumet river; but [fol. 24] alleges that the effect upon said Little Calumet river that the construction and maintenance of said proposed waterway will have is fully set forth and shown hereinafter.

Seventh. This defendant admits that the various bodies of water mentioned in paragraph 7 of the bill of complaint are each connected with the other and are, in a measure, interdependent upon each other for their respective water levels; but this defendant expressly denies the allegation in said paragraph contained that the construction and maintenance of the proposed waterway, as planned by the defendant, and its consequent diversion of the water from Lake Michigan, would lower the levels of all of said waters, or any of them; and further expressly denies that such construction and maintenance of said channel would injure or impede navigation in the harbors and channels of said waters, or in any of them.

Eighth. This defendant further answering admits that Section 10 of an Act of Congress, approved May 3rd, 1899, is substantially as set forth in paragraph 8 of the complainant's bill herein; but this defendant denies that this act has any binding force on this defendant; or that said act in anywise prohibits the construction and maintenance of the channel or waterway proposed to be constructed by this defendant; or that the same is a constitutional or valid enactment.

Ninth. This defendant further answering admits that on or about the 28th of November, A. D. 1906, this defendant made application to the Secretary of War for a permit to reverse the flow of the Calumet [fol. 25] river, and that thereafter proceedings were had substantially as alleged by the complainant in paragraph 9 of this bill; but this defendant expressly denies that by said application it admitted the jurisdiction of the Secretary of War in such matters; or that it required such permit from said Secretary of War to construct and maintain said channel; but, on the contrary, alleges that it made such application to said Secretary of War purely as a matter of comity and in order to promote and maintain the spirit of harmony which it believed should obtain between the Federal Government

and the various state and local government of the United States; all of which more fully appears from a statement filed with the Secretary of War at the time of making said application, a part of which is in words and figures as follows, to-wit:

"That while insisting upon the right as a matter of right, we are entitled, nevertheless, to a permit from the Secretary of War; to evidence that there exists between the two governments that 'spirit of harmony and conciliation' which, in the words of Chief Justice Marshall, in *Gibbons v. Ogden* (9 Wheaton, 1), 'ought always to characterize the conduct of governments standing in the relation which that of the Union and those of the states bear to each other'; and to further evidence on the part of said governments that 'frank and candid co-operation for the general good' spoken of by Justice Johnson in the same case, 'which should always take place where there is a seeming blending of the power of the two governments and an apparent conflict.'"

Tenth. This defendant admits that through and by its Board of Trustees it adopted and passed an order substantially as set forth in paragraph 10 of the bill of complaint, and has announced its intention to construct and maintain said waterway and channel as [fol. 26] therein alleged, because of its belief that it has a lawful right to do so.

Eleventh. This defendant admits that Section 1 of an Act of Congress, approved June 29th, 1906, is substantially as set forth in paragraph 11 of complainant's bill of complaint; but this defendant denies that said law has any application to the work contemplated by this defendant, or that it has any binding force or effect in this case.

Twelfth. This defendant denies the allegation in paragraph 12 of complainant's bill of complaint, that the Congress of the United States has not provided for the diversion of any of the waters of Lake Michigan through said proposed waterway and channel; but, on the contrary, alleges that this defendant and the State of Illinois are expressly authorized by Congressional legislation to construct and maintain a waterway such as is proposed by the defendant and to divert the waters of Lake Michigan through the same into the Illinois river.

Thirteenth. This defendant denies that it cannot lawfully construct and maintain said proposed channel as alleged in paragraph 13 of the bill of complaint herein; but, on the contrary, alleges that it is lawfully empowered so to do, and that it is its duty so to do under the laws of the State of Illinois and of the United States.

Fourteenth. This defendant admits that on the 16th day of October, 1907, it actually began the work of excavating said proposed channel and the construction thereof, as alleged in paragraph 14 of the bill of complaint herein; and that it proposes to construct said [fol. 27] channel in the manner and form and of the character,

size and dimensions as hereinafter set forth; but this defendant expressly denies that the construction and maintenance thereof will be to the manifest or irreparable injury of the United States, or to interstate and foreign commerce; but, on the contrary, alleges that the construction and maintenance of said channel and waterway will benefit both state and interstate commerce.

Fifteenth. For further answer, this defendant says that in 1822 and in 1827 the Congress of the United States enacted laws authorizing the State of Illinois to construct a waterway suitable for navigation, connecting the waters of Lake Michigan with the waters of the Illinois river and to thereafter maintain the same at all times in a condition suitable for navigation, as will more fully appear from said acts, reference to which is hereby made. That after the passage of said acts by the Congress of the United States, the State of Illinois accepted the same and thereafter, by various acts duly passed by the General Assembly of said state, and approved by the governor thereof, the said state authorized the construction of, and did construct, and has ever since maintained, a waterway connecting the waters of Lake Michigan with the waters of the Illinois river, over and through which waterway commerce has been carried on continuously since the date of the completion thereof in, to-wit, 1848.

This defendant hereby refers to each and all of the several acts of the General Assembly of the State of Illinois relating to said waterway, which said acts are generally entitled "Acts relating to the [fol. 28] Illinois and Michigan Canal," and asks for the benefit thereof as fully as if set forth herein. This defendant further says that the waterway as originally constructed for the purpose of connecting the waters of Lake Michigan with the waters of the Illinois river, connected the waters of said lake with those of the Illinois river by a channel terminating at or near the City of Peru, on the Illinois river, in the County of La Salle and State of Illinois, and beginning at a point on the Chicago river, which in turn connected with Lake Michigan, in the City of Chicago, and also by a branch terminating at or near the mouth of Stony Creek, on the Calumet river, which said channel and which said branch connecting with said Calumet river are represented and shown on the map or plat which is hereto attached, marked "Exhibit E," by lines colored yellow.

Sixteenth. This defendant for further answer says that in compliance with and pursuant to the powers and duties resting upon this defendant under and by virtue of the several acts incorporating it heretofore referred to, this defendant has constructed a channel of the character and size and dimensions provided for by the original act of its incorporation, extending from a point on the Chicago river, in the City of Chicago, near the original termination of the Illinois and Michigan Canal, parallel with said Illinois and Michigan Canal, to and through the City of Joliet, as represented and shown upon said "Exhibit E" by lines colored red; that the construction of said channel was begun in the year 1892 and work thereon has proceeded continuously from that day to this and is, as yet, not entirely completed. Said channel was completed from its said connection with

[fol. 29] the Chicago river to a point at or near Lockport, a distance of 3 or 4 miles northeasterly from the City of Joliet, in the year 1900 sufficiently to turn the waters therein for the purpose for which said canal had been constructed; and that in the year 1900, pursuant to the various laws of the State of Illinois and the laws of the United States, this defendant did divert the waters of said Chicago river and Lake Michigan to and into said waterway and discharged the same therethrough into the Desplaines river and thence into the Illinois river; that since the turning in of said waters, this defendant has prosecuted the work of extending said canal from said point in Lockport to and through the City of Joliet and has likewise continued the work of deepening and widening the Chicago river with which it connects for the purpose of making said waterway sufficient to accomplish the objects of its creation, both as an outlet for the sewage of the Sanitary District and for the purpose of commerce and navigation; that said waterway or channel has been substantially completed from its connection with said Chicago river to the City of Joliet, a distance, approximately, of thirty-two miles; that from the point of its connection with the Chicago river for a distance of 7.8 miles said waterway is 110 feet wide on the bottom and 198 feet wide at the water line, with a depth of 22 feet of water; that for the next 5.3 miles it is 202 feet wide on the bottom and 290 feet wide at the water line, with a minimum depth of 22 feet of water; for the next 14.95 miles it is 160 feet wide on the bottom and 162 feet wide at the water line, with 22 feet depth of water, the same being cut through solid rock and glacial drift; for the next 2 miles its minimum [fol. 30] width is 160 feet at the bottom and it is irregular in width from there on, varying from 160 to 500 feet in width, with a minimum depth of 22 feet and maximum depth of 24 feet.

At this point there is a lock 130 feet long and 22 feet wide and 12 feet over mitre sills. Alongside this lock, there is a reservation for a lock of ample capacity to accommodate the largest lake-going vessels. For the next one mile, running southerly from said lock, the channel is 160 feet wide with a minimum depth of 19.7 feet; and for the next mile it is 160 feet wide with a minimum depth of 10 feet. That upon the construction of a large lock, provided for as aforesaid, the largest lake-going vessels will be able to pass through this channel from Lake Michigan to the City of Joliet. That the total amount expended by this defendant so far in the construction, operation and maintenance of said waterway to September 1, 1907, exceeded the sum of \$54,500,000.00, which said sum, taken in connection with the amount theretofore expended by the State of Illinois in the construction and maintenance of the Illinois and Michigan Canal, exceeds, so this defendant is informed and believes, and upon such information charges the fact to be, the sum of \$61,037,254.79.

Seventeenth. This defendant, further answering, says that after the turning in of the waters as aforesaid into the waterway constructed by this defendant as aforesaid, the City of Chicago, lying wholly within the confines of the territory embraced by this defendant, has so reconstructed and built its sewerage system, by a system of intercepting sewers and trunk sewers, as to carry the sewage of that portion

[fol. 31] of said city north of 87th street and south of Fullerton avenue into said channel, thus preventing the discharge thereof into Lake Michigan as the same had been wont theretofore to do and, in this manner, the said city has prevented the pollution of Lake Michigan and partially protected the water supply of said city, which is procured from said lake through water tunnels and intakes extending out a distance of four miles into the lake. The location of the intakes through which the City of Chicago obtains its water from Lake Michigan are represented and shown upon Exhibits "A" and "D," as thereon marked and indicated; and the territory within said city which is now discharging into this defendant's channel and waterway is represented upon "Exhibit D" by that space colored pink; that there has been constructed by the City of Chicago a trunk sewer or conduit from a point near the intersection of the shore line of Lake Michigan with 39th street westward to the south fork of the south branch of the Chicago river, through which said trunk sewer or conduit water from said Lake is forced by means of a pumping system, with a maximum capacity of said trunk sewer or conduit of 120,000 cubic feet per minute.

Eighteenth. This defendant, for further answer, says that the sewage from that portion of the territory of this defendant lying south of 87th street, and embracing the towns and territories as represented and shown upon "Exhibit D," still discharges into Lake Michigan, either directly or through the Calumet river; that the same pollutes the waters of the said lake and is a constant menace to the health of the people of said district, by reason of the fact that [fol. 32] it contaminates the waters of said lake in proximity to and around and about the so-called Hyde Park or 68th street intake, through which said intake a large proportion of the water supplying the inhabitants of the City of Chicago, and other municipalities within this defendant, is obtained.

This defendant is informed and believes, and upon such information charges the fact to be, that the water mains of the City of Chicago are so interdependent that the water entering any of the same may find its way into any and all portions of said city, and that the population of any one of the intakes of said city does or may pollute the water supply of said entire city and in this manner menaces and threatens the health and welfare of all the people of said community; that there is being discharged into said Lake Michigan the sewage of substantially 200,000 people residing south of said 87th street; that within said territory there are populous and rapidly growing cities, to wit, South Chicago, Pullman, West Pullman, Kensington and Harvey, together with several smaller towns and municipalities and a considerable portion of the City of Chicago.

Nineteenth. This defendant, further answering, says that it is for the purpose of protecting the water supply of its inhabitants from contamination by the sewage of the people living south of said 87th street, and for the purpose of complying with the duty resting upon it by the several laws of the State of Illinois, that it proposes to construct and maintain a waterway or channel, the construction of

which is sought to be enjoined by the bill of complaint herein; that [fol. 33] the authority of this defendant to construct said waterway or channel, and the purposes to be served by the construction and maintenance thereof, and the duty resting upon this defendant to construct the same, all fully appear from the several acts of the State of Illinois heretofore referred to. The said proposed channel, when completed, will be located as represented and shown on Exhibits "B" and "C"; that it will be substantially 21 miles in length, measuring from the eastern shore line of Lake Calumet along the line of said proposed waterway or channel to the connection thereof with the main channel at Sag; that said defendant proposes to construct and maintain a channel of the size, character and dimensions as follows, to wit: Beginning at the easterly termination thereof at a point indicated as the "Forks" in "Exhibit C" hereto attached, the outlet of Lake Calumet as shown on said exhibit, will be dredged 14 feet so as to give a depth to said outlet of 22 feet in place of the present depth of 8 feet. The bottom of said outlet as so dredged will have a width of 72 feet; the width at the water line will be not less than 160 feet. Running thence westerly through the southern portion of Lake Calumet one mile, dredging so as to create a channel having a width at the bottom of not less than 72 feet and a depth of not less than 20 feet, in place of the present depth of $4\frac{1}{2}$ feet in said portion of Lake Calumet. From the westerly shore of Lake Calumet to a point on the Little Calumet river near 129th street one and one-quarter miles, the channel will be constructed 29 feet in depth with a width of 72 feet on the bottom and 160 feet at the water line, and depth of water of 22 feet. From the intersection of said channel with said Little [fol. 34] Calumet river, the channel of said river will be utilized as a section of said proposed waterway for a distance of approximately two miles to the confluence thereof with Stony Creek. Said section of said river so utilized will be dredged $12\frac{1}{2}$ feet, giving a depth of water therein of 20 feet in place of the present depth of water therein of 10 feet. The width of said section of said river as so dredged at the bottom thereof will be 72 feet and the width thereof at the water line will be not less than 160 feet, or an average of 10 feet greater than the present average width of said section of said river. From the confluence of Stony Creek and the Little Calumet river, said channel will run in a westerly direction for a distance of approximately 16 miles through alternating sections of glacial drift and rock. Through glacial drift sections, said channel will be 72 feet wide at the bottom and 162 feet wide at the surface and 22 feet deep. Through rock sections, said waterway or channel will be 93 feet wide, with vertical sides, and depth of 22 feet. There will be constructed at the confluence of Stony Creek and the Little Calumet river a guard lock and controlling works through and by means of which this defendant will be able to control absolutely the quantity of water permitted to enter said channel and flow westwardly therethrough; that by the operation of the controlling works of this defendant it will be possible to prevent the flow of any water westwardly through said channel; that the maximum amount of water that it will be able

to flow westwardly through said channel will not exceed 4,000 cubic feet per second.

Twentieth. This defendant, further answering, says that upon [fol. 35] the completion of said channel, as proposed, this defendant proposes to flow westwardly through said channel waters sufficient to reverse the flow of the Calumet river in order to carry the sewage discharging therein through said channel and away from Lake Michigan, so that the same will no longer contaminate the water supply of the inhabitants of said district; but that the quantity of water so diverted will only be sufficient to cause a reversal of said flow and to properly dilute said sewage so as to comply with the several laws under which this defendant is incorporated, but that at no time would the amount of water so diverted through said channel exceed the amount of 4,000 cubic feet per second. That the maximum amount of water that can be flowed through the main channel of this defendant westwardly from the confluence of the proposed channel therewith is 840,000 cubic feet per minute; that the amount which this defendant flows therethrough, and will flow therethrough from time to time, will only be such an amount as is required by law for the proper dilution of the sewage of the district; and that the amount that this defendant does now and will thereafter flow, whether said proposed channel be constructed or not, will be said amount sufficient to dilute said sewage; that by the construction and maintenance of said proposed channel, it is not proposed by this defendant to flow any more than sufficient to meet the requirements of law to properly dilute the sewage of the district, which said amount it would be bound by law to flow through its main channel without the construction of the channel complained of by the complainant.

Twenty-first. For a further answer, this defendant says that it ex-[fol. 36] pressly denies that the construction and maintenance of said proposed channel would in any wise affect the levels of the Great Lakes and the channels, harbors and rivers connected therewith; or that it will in anywise injure, interfere with or be to the detriment of the commerce thereon; and this defendant expressly denies that the construction and maintenance of the proposed channel will in any wise affect the navigable capacity of the Little Calumet or Grand Calumet rivers, and alleges that it will not in any wise affect, alter, modify or change said Little Calumet river other than is herein specifically set forth, which this defendant alleges is to the benefit of said river and to the commerce thereon and not to the detriment thereof.

Twenty-second. And, further answering, this defendant says that "Exhibit F," a map or plat attached hereto and made a part hereof, shows in detail the depth, channel width and top width of the Calumet and Little Calumet rivers from Lake Michigan to Stony Creek as the same now exist; that the depth of Calumet river from Lake Michigan to 106th street is 21 feet, with a channel width of 200 feet

and a top width of from 225 to 300 feet; that from 106th street to 110th street said Calumet river has a depth of 20 feet, a channel width of 200 feet and a top width of from 230 feet to 250 feet; that from 110th street to 122nd street said Calumet river has a depth of 21 feet, a channel width of 200 feet and a top width of 250 feet; that from 122nd street to a point known as "Chittenden Bridge," designated upon said "Exhibit F" as Chittenden road, the said Calumet river has a depth of 17 feet, a channel width of 180 feet and a top [fol. 37] width of from 250 to 330 feet; that from said Chittenden bridge to a point shown upon said "Exhibit F" and designated as the "Forks," the said Calumet river has a depth of from 5 feet to 8 feet, a channel width of from 50 feet to 200 feet and a top width of 250 feet; that from the forks aforesaid to a point shown upon said "Exhibit F" and designated as the "Junction," being the confluence of the Grand Calumet and the Little Calumet rivers, the said river has a depth of 8 feet, a channel width of 60 feet and a top width of 112 feet; and that the Little Calumet river from the point designated upon said "Exhibit F" as the "Junction" to the confluence of Stony Creek and said Little Calumet river has a depth varying from 4 feet to 10 feet, a channel width of from 65 feet to 140 feet and a top width of from 105 feet to 270 feet.

Twenty-third. This defendant, further answering, says that upon the completion of the said channel as proposed it will afford navigation for vessels of the said Great Lakes through the Calumet river to its main channel and from thence to the City of Joliet and will be a sufficient and valuable route for commerce, both state and interstate, from Lake Michigan to the City of Joliet; that the construction and maintenance of said channel will be to the interest of the commerce of the Great Lakes and of the Desplaines, Illinois and Mississippi rivers; that all of the waters which this defendant now diverts from Lake Michigan, and which it proposes hereafter to divert through both its main and proposed channel, is discharged by this defendant into the Desplaines river and from thence into the Illinois river and forms through and by said rivers a navigable channel from [fol. 38] Lake Michigan to the Mississippi river and is to the interest of the commerce upon said rivers and to the commerce of the State of Illinois and of the United States; and that the construction and maintenance of the same by this defendant through and by authority of the State of Illinois is in accordance with the declared and express public policy both of the United States and of the State of Illinois, to forever maintain a waterway suitable for navigation connecting the waters of Lake Michigan with the waters of the Illinois and Mississippi rivers.

Twenty-fourth. This defendant further answering says that it is the only body or municipality clothed with authority to provide for the drainage and disposal of the sewage, and the furnishing of outlets for such outlets and sewage, within its corporate limits; that by reason of the laws of the State of Illinois, under and by virtue of which it exists, it is proceeding to dispose of and provide a means

for the disposal of, by a channel and adjuncts thereto, of all the sewage arising within its corporate limits which would otherwise flow into Lake Michigan, thus polluting the water supply of the inhabitants of this defendant; that the powers of this defendant and its authority in the matter of furnishing the outlets for the sewage and drainage of its territory, and the manner thereof, are circumscribed by the laws pursuant to which it is organized and existing; and that there is no other lawful method of disposing of the sewage and drainage of the territory comprised within the corporate limits of this defendant other or different than by the construction of channels and adjuncts thereto; and that the proposed channel complained of [fol. 39] by the complainant herein is a part of the only plan for the disposal of such sewage and the furnishing of outlets therefor which this defendant is empowered to carry out.

And this defendant, further answering, denies that the complainant is entitled to the relief, or any part thereof, in the said bill of complaint demanded, and prays the same advantage of this answer as if it had pleaded or demurred to the said bill of complaint; and prays that it be dismissed with its reasonable costs and charges in this behalf most wrongfully sustained.

The Sanitary District of Chicago, by John C. Williams, Its Solicitor. E. C. Lindley, Of Counsel.

[fol. 40]

EXHIBIT G TO ANSWER

An ordinance for the establishment of a right of way for a channel from the westerly reserve line of the Illinois and Michigan Canal in Section 14, T. 37 N., R. 11 E., of the 3rd P. M., to the north and south center line of Section 32, T. 37 N., R. 14 E., of the 3rd P. M., and for the construction of a channel from the center line of the main drainage channel of the Sanitary District of Chicago, in said Section 14, T. 37 N., R. 11 E., of the 3rd P. M., to said center line of Section 32, T. 37, N., R. 14 E., of the 3rd P. M., in Cook County, Illinois.

Be it ordained by the Board of Trustees of the Sanitary District of Chicago:

Section 1. That there be and is hereby laid out and established a route for a channel and outlet for the Sanitary District of Chicago, which channel is hereby directed to be constructed and maintained, together with the necessary additions thereto within the limits, of said route, which said route, shall be over, upon and through certain lands lying in the County of Cook and State of Illinois, and is described as follows, to-wit:

Beginning at the point of intersection of the westerly reserve line of the Illinois and Michigan Canal with the north and south center line of Section 14, T. 37 N., R. 11 E. of the 3d P. M.; running thence

south along said north and south center line of said Section 14 to a point 1,057.5 feet north of the center of said Section 14; thence southeasterly to the point of intersection of the east line of said Section 14 with the northerly reserve line of the Sag Feeder; thence along the northerly reserve line of said Sag Feeder to the north and south center line of Section 13, T. 37 N., R. 11 E. of the 3d P. M.; thence southeasterly to a point in the east line of Section 21, T. 37 N., R. 12 E. of the 3d P. M. 685.3 feet south of the northeast corner of said [fol. 41] Section 21; thence southeasterly to a point in the east line of Section 23, T. 37 N., R. 12 E. of the 3d P. M. 2,152.6 feet south of the northeast corner of said Section 23; thence southeasterly to the northwest corner of Section 29, T. 37 N., R. 13 E. of the 3d P. M.; thence east to the northwest corner of the N. E. $\frac{1}{4}$ of the N. W. $\frac{1}{4}$ of said Section 29; thence south along the west line of said N. E. $\frac{1}{4}$ of the N. W. $\frac{1}{4}$ of said Section 29 for a distance of 400 feet; thence southeasterly to a point in the north and south center line of said Section 29, 970 feet south of the north line of said Section 29; thence southeasterly to a point in the north line of the S. W. $\frac{1}{4}$ of the N. E. $\frac{1}{4}$ of said Section 29, 740 feet west of the northeast corner of said S. W. $\frac{1}{4}$ of the N. E. $\frac{1}{4}$ of said Section 29; thence east to the northeast corner of said S. W. $\frac{1}{4}$ of the N. E. $\frac{1}{4}$ of said Section 29; thence south along the east line of said S. W. $\frac{1}{4}$ of the N. E. $\frac{1}{4}$ of said Section 29 for a distance of 430 feet; thence southeasterly to a point in the east and west center line of the N. E. $\frac{1}{4}$ Section 33, T. 37 N., R. 13 E. of the 3d P. M. 510 feet west of the east line of said Section 33; thence south along said east line of said Section 33 for a distance of 640 feet; thence southeasterly to the northwest corner of the N. E. $\frac{1}{4}$ of the S. W. $\frac{1}{4}$ Section 34, T. 37 N., R. 13 E. of the 3d P. M.; thence southeasterly to a point in the north and south center line of said Section 34, 500 feet south of the east and west center line of said Section 34; thence southeasterly to a point in the north and south center line of the S. E. $\frac{1}{4}$ of said Section 34, 780 feet south of the east and west centre line of said Section 34; thence southeasterly to a point in the east line of said Section 34, 1,753.46 feet north of the southeast corner of said Section 34; thence east to a point in the north and south center line of Section 36, T. 37 N., R. 13 E. of the 3d P. M., 1,753.46 feet north of the south line of said Section 36; thence easterly to the northwest corner of Lot 20, Block 2, in Storz & Rhode's [fol. 42] Sub. of Lots 11, 12, 13 and 14 of Robinson's Subdivision, in the City of Blue Island; thence east along the north line of said Lot 20 to the west line of Lot 24, in said Block 2; thence north along the west line of said Lot 24 to the most northerly corner thereof; thence southeasterly along the northerly line of said Lot 24; thence southeasterly along the northerly line of Lot 25 in said Block 2 for a distance of 40 feet; thence easterly to the north line of the east and west alley in Dornhecker's Sub. of Block 12, Robinson's Addition, in the City of Blue Island; thence east along the north line of said alley across Greenwood Avenue in said City of Blue Island and along the north line of the east and west alley in Dornhecker's Sub. of Block 11, Robinson's Addition to the southeast corner of Lot 1 in said Dornhecker's Sub. of Block 11; thence easterly to the most west-

erly corner of Lot 9, Block 10, Superior Court partition of Block 10, etc., in Robinson's Addition, in the City of Blue Island; thence northeasterly along the northwesterly line of said Lot 9 to the most northerly corner thereof; thence southeasterly along the northeasterly line of said Lot 9 to the most easterly corner thereof; thence northeasterly along the southeasterly lines of Lots 8 and 7 in said Block 10, to the most easterly corner of said Lot 7; thence easterly to the most northerly corner of Lot 7 in Bartelme's Sub. of Block 9, Robinson's Addition, in the City of Blue Island; thence southeasterly along the northeasterly line of said Lot 7 to the most easterly corner thereof; thence northeasterly to the northwest corner of Lot 4, Block 57, in Portland, a Subdivision in the City of Blue Island; thence east along the north line of said Lot 4, across Rexford Street, and along the north line of Lot 6, Block 56, in said City of Blue Island, to the west line of Lot 8 in said Block 56; thence north along the west line of said Lot 8 to the east and west center line of said Block 56; thence east along the east and west center line of said Block 56 across Gregory Street, along the east and west center line of Block 55, across [fol. 43] Wabash Street, along the east and west center line of Block 54, across Chatham Street, along the east and west center line of Block 53, and across Chicago Street, all in the City of Blue Island, to the east line of said Chicago Street; thence north along the east line of said Chicago Street to the southeast corner of said Chicago Street and Fulton Street; thence east along the south line of said Fulton Street and across State Street to the southeast corner of Fulton Street and State Street; thence north across said Fulton Street to the southwest corner of Keiffer's Addition to Blue Island; thence east along the south line of said Keiffer's Add. to Blue Island; to the west line of the north and south alley in said Keiffer's Add. to Blue Island; thence north along the west line of said alley to the northeast corner of Lot 12, in said Keiffer's Add.; thence east across said alley and along the north line of Lot 17 in said Keiffer's Addition to the west line of Robinson Street, in said City of Blue Island; thence north along said west line of Robinson Street to the south line of the east and west alley in said Keiffer's Addition; thence east across said Robinson Street to the most northerly corner of Block 49, in the City of Blue Island; thence southeasterly along the northeasterly line of said Block 49 to the most easterly corner of Lot 4 in said Block 49; thence easterly across Girard Street to the most southerly corner of Block 25 in said Portland, a Subdivision in said City of Blue Island; thence easterly to the southwest corner of Block 26, in said Portland, a Subdivision in the Town of Calumet; thence north along the west line of said Block 26 to the east and west center line thereof; thence east along the east and west center line of said Block 26 to the east line thereof; thence easterly across Colonade Row, in said Town of Calumet, to the Northwest corner of Lot 7, Block 27, in said Town of Calumet; thence east along the north line of said Lot 7 to the west line of Lot 4 in said Block 27; thence north along the west line of said Lot [fol. 44] 4 to the north line of said Block 27; thence east along the north line of said Block 27 and across Tremont Avenue to the southeast corner of Summit Street and Tremont Avenue; thence north

across Summit Street to the north line of said Summit Street; thence east along the north line of said Summit St. and across Exeter Street to the southwest corner of Block 6 in said town of Calumet; thence north along the west line of said Block 6 to the east and west center line thereof; thence east along said east and west center line of said Block 6 across Concord Street and along the north lines of Lots 6, 7 and 8, Block 5, in said Town of Calumet, to the west line of Lot 2 in said Block 5; thence north along the west line of said Lot 2 to the north line of said Block 5; thence east along the north line of said Block 5 across Portland Street to the northwest corner of Block 4 in said Town of Calumet; thence east along the north line of said Block 4 for a distance of 120 feet; thence northeasterly to a point in the west line of Section 31, T. 37 N., R. 14 E. of the 3d P. M. 160 feet north of the east $\frac{1}{4}$ corner of said Section 31; thence northeasterly to a point in the east line of the W. $\frac{1}{2}$ of the S. W. $\frac{1}{4}$ of the N. W. $\frac{1}{4}$ Section 32, T. 37 N., R. 14 E. of the 3d P. M., 300 feet north of the east and west center line of said Section 32; thence east to a point in the north and south center line of said Section 32, 300 feet north of the center of said Section 32; thence south along the north and south center line of said Section 32 to the southeast corner of Block 159, in the Town of Calumet; thence southwesterly along the southeasterly line of said Block 159 to the most southerly corner thereof; thence northwesterly to the most southerly corner of Block 37, in the Town of Calumet; thence northwesterly along the southwesterly line of said Block 37, to the most westerly corner thereof; thence northwesterly to the most southerly corner of Block 36, in the Town of Calumet; thence westerly to the southeast corner of Block 38, [fol. 45] in the Town of Calumet; thence west along the south line of Block 38, across Cass Street, along the south line of Block 39, across Illinois Street, and along the south line of Block 40, all in the Town of Calumet, to the southwest corner of said Block 40; thence south across Randolph Street to the northwest corner of Block 73, in said Town of Calumet; thence west across Berrien Street to the northeast corner of Block 72 in said Town of Calumet; thence west along the north line of said Block 72 to the northwest corner thereof; thence westerly across Chadwick Street to the northeast corner of Lot 4, Block 71, in said Town of Calumet; thence south along the east line of said Lot 4 to the southeast corner thereof; thence west along the south line of said Lot 4 to the east line of Lot 6 in said Block 71; thence south along the east line of said Lot 6 to the southeast corner thereof; thence west along the south line of Lots 6, 7, 8, 9 and 10 in said Block 71 to the west line of said Block 71; thence south along the west line of said Block 71 to the southwest corner thereof; thence west across Duane Street and along the south line of Block 70 in said Town of Calumet to the southwest corner thereof; thence south across Sycamore Street to the northwest corner of Block 82, in the Town of Calumet; thence west across Portland Street to the northeast corner of Block 83, in said Town of Calumet; thence south along the east line of said Block 83 to the east and west center line thereof; thence west along said east and west center line, across Concord Street and along the east and west line of Block 45, in said

Town of Calumet, to the east line of said Block 45; thence south along the east line of said Block 45 to the southwest corner thereof; thence across Exeter Street and along the south line of Block 46, in said Town of Calumet, to the southwest corner thereof; thence south across Elm Street to the northwest corner of Block 88, in said Town of Calumet; thence west across Tremont Street and along the north line of Block 89, in said Town of Calumet, to the northwest corner [fol. 46] thereof; thence south along the west line of said Block 89 to the east and west center line thereof; thence west across Colonade Row and along the east and west center line of Block 90, in said Portland, a Subdivision in the Town of Calumet to the west line thereof; thence west to the point of intersection of the east and west center line of Block 91, in said Portland, a Subdivision in the City of Blue Island, with the east line of said Block 91; thence west along the east and west center line of said Block 91 to the west line thereof; thence south along the west line of said Block 91 to the southwest corner thereof; thence west across Robinson Street and along the south line of Block 92, in the City of Blue Island, to the southwest corner thereof; thence southwesterly to the northeast corner of Lot 4, Block 98, in the City of Blue Island; thence west along the north line of said Block 98, across Chicago Street, along the north line of Block 97, across Chatham Street, and across the north line of Rexford & Bellamy's re-sub. of Block 96, all in the City of Blue Island, to the northwest corner of said Rexford & Bellamy's re-sub.; thence south along the west line of said Rexford & Bellamy's re-sub. to the north line of the alley in said Rexford & Bellamy's re-sub.; thence westerly across Wabash Street to the point of intersection of the east and west center line of Block 95, in said City of Blue Island, with the east line of same; thence west along said east and west center line of said Block 95, across Gregory Street, and along the east and west center line of Block 94, in said City of Blue Island, to the east line of Lot 5 in said Block 94; thence north along the east line of said Lot 5 to the northeast corner thereof; thence west along the north line of said Lot 5 to the west line of said Block 94; thence westerly across Rexford Street to the northeast corner of Lot 2, in re-subdivision of Block 93, in said Portland, a subdivision in said City of Blue Island; thence west along the north line of said Lot 2 to the east line [fol. 47] of Lot 1, Block 17, in Assessor's Division of Blocks 17, 21, 22 and 25, in Robinson's Addition; thence south along said east line of said Lot 1 to the southeast corner thereof; thence east along the south line of said Lot 1 to the southwest corner thereof; thence northwesterly across Western Avenue, in the City of Blue Island, to the northeast corner of Lot 2, in subdivision of Block 18, Robinson's Addition; thence west along the north line of said Lot 2 to the northwest corner thereof; thence northwesterly to the northeast corner of Lot 2, Block 2, in Owner's Sub. of Block 20, and Lot 2, Block 19, in Robinson's Addition; thence west along the north line of said Lot 2 to the northwest corner thereof; thence westerly across Ann Street to the northeast corner of Lot 3, Block 1, in Owners' Sub. of Block 20, and Lot 2, Block 19, in Robinson's Addition; thence west along the north line of said Lot 3 across the north and south alley in said

Block 1, and along the north line of Lot 22 in said Block 1 to the west line of said Block 1; thence westerly to the northeast corner of Lot 6, in subdivision of Lot 6, Robinson's Subdivision, in City of Blue Island; thence westerly along the south line of Kott Street, across the north and south alley to the northwest corner of Lot 3 in said subdivision of Lot 6; thence westerly to the southeast corner of Block 4, Storz & Rhode's Subdivision of Lots 11, 12, 13 and 14 of Robinson's Subdivision; thence west along the south line of said Block 4, across Vine Avenue and along the south line of Block 3 in said Storz & Rhode's Sub. to the southwest corner thereof; thence westerly to a point in the north and south center line of Section 36, T. 37 N., R. 13 E. of the 3d P. M., 1093.46 feet north of the S. $\frac{1}{4}$ corner of said Section 36; thence west to a point in the west line of said Section 36, 1,093.46 feet north of the southwest corner of said Section 36; thence westerly to the southeast corner of Lot 46, Block 2; thence westerly along the south line of said Lot 46, across the alley [fol. 48] and along the south line of Lot 87, Block 2, across Sawyer Street, along the south line of Lot 168, Block 3, across the alley and along the south line of Lot 208, in said Block 3, across Spaulding Avenue, along the south line of Lot 288, Block 6, across the alley, along the south line of Lot 330 in said Block 6, across Turner Avenue along the south line of Lot 408, Block 7, across the alley, along the south line of Lot 449 in said Block 7 to the west line of said Block 7, all in Jas. J. Smith & Co.'s Second Addition to Clairmont, Lot 3 of Engelland's Sub. of E. $\frac{1}{2}$, S. E. $\frac{1}{4}$, Sec. 35, T. 37 N., R. 13 E. of the 3d P. M.; thence westerly to a point in the west line of the East $\frac{1}{2}$ of the S. E. $\frac{1}{4}$, Sec. 35, T. 37 N., R. 13 E. of the 3d P. M. 1,093.46 feet north of the south line of said Section 35; thence west to a point in the west line of said Section 35, 1,093.46 feet north of the southwest corner of said Section 35; thence northwesterly to the northwest corner of the S. $\frac{1}{2}$ of the S. E. $\frac{1}{4}$, Section 34, T. 37 N., R. 13 E. of the 3d P. M.; thence north along the north and south center line of said Section 34 to a point 1,500 feet north of the S. $\frac{1}{4}$ corner of said Section 34; thence northwesterly to a point in the east line of the N. W. $\frac{1}{4}$ of the S. W. $\frac{1}{4}$ of said Section 34, 660 feet north of the east and west center line of said S. W. $\frac{1}{4}$ of said Section 34; thence northwesterly to the W. $\frac{1}{4}$ corner of said Section 34; thence northwesterly to a point in the north and south center line of the N. E. $\frac{1}{4}$ Section 33, T. 37 N., R. 13 E. of the 3d P. M., 2,000 feet south of the north line of said Section 34; thence northwesterly to a point in the north and south center line of the S. E. $\frac{1}{4}$ of Section 29, T. 37 N., R. 13 E. of the 3d P. M. 370 feet south of the east and west center line of said Section 29; thence northwesterly to a point in the east and west center line of said Section 29, 780 feet east of the center of said Section 29; thence west to the center of said Section 29; thence north along the north and south center line of said Section 29 for a distance of 540 feet; thence north [fol. 49] westerly to a point in the south line of the N. W. $\frac{1}{4}$ of the N. W. $\frac{1}{4}$ of said Section 29; 900 feet east of the west line of said Section 29; thence west to the southwest corner of the N. W. $\frac{1}{4}$ of the N. W. $\frac{1}{4}$ of said Section 29; thence north on the west line of said

Section 29, 301 feet; thence northwesterly to a point in the west line of Section 24, T. 37 N., R. 12 E. of the 3d P. M. 3,162.4 feet south of the north line of said Section 24; thence northwesterly to a point in the west line of Section 22, T. 37 N., R. 12 E. of the 3d P. M. 1,702.7 feet south of the north line of said Section 22; thence northwesterly to a point in the south line of Section 17, T. 37 N., R. 12 E. of the 3d P. M. 1,441.9 feet east of the southwest corner of said Section 17; thence west to said southwest corner of said Section 17; thence north on the west line of said Section 17 for a distance of 261.8 feet; thence northwesterly to a point in the east and west center line of Section 14, T. 37 N., R. 11 E. of the 3d P. M., 200 feet east of the center of said Section 14; thence west along the east and west center line of said Section 14 to the westerly reserve line of the Illinois and Michigan Canal; thence northeasterly along said westerly reserve line of the Illinois and Michigan Canal to the point of beginning.

Section 2. That a channel be constructed by the Sanitary District of Chicago, the center line of which shall begin at the center line of the Main Channel of the Sanitary District of Chicago in Section 14, T. 37 N., R. 11 E. of the 3d P. M., in Cook County, Illinois, at a point 807.55 feet (measured along the center line of said Main Channel), distant from the westerly line of said Section 14; running thence south 84 degrees east to the westerly reserve line of the Illinois and Michigan Canal; thence along and upon the center line of the above established route. Said channel shall be constructed to a width of 90 feet at the bottom, with vertical sides—where the same is constructed through rock and said channel shall be constructed to a width of 70 feet on the bottom, *which* side slopes of three vertical to five feet horizontal, where the same is constructed through earth, and said channel shall be constructed to a depth and on a grade sufficient to insure a flow of 22 feet of water.

Section 3. The Finance Committee of the Board of Trustees of the Sanitary District of Chicago is hereby authorized and directed to negotiate for and to purchase for and on behalf of the Sanitary District of Chicago, upon such terms as said Finance Committee may deem just, any and all property, right of way and privilege within said route for said channel, as described in this ordinance; and in the event that said Finance Committee is unable to agree with any of the owners or parties in interest for any of said property or their interests therein, then, upon direction of said Finance Committee, the Attorney of the District shall institute proceedings in such court as he may deem proper for the condemnation of any such property, right of way or privilege as said Finance Committee is unable to acquire by purchase or otherwise.

Section 4. That attached hereto and made a part of this ordinance is a plat entitled "Sanitary District of Chicago, Ordinance Map for the Right of Way of the Calumet-Sag Channel, from the westerly reserve line of the Illinois and Michigan Canal, in Section 14, T. 37 N., R. 11, E. of the 3d P. M.," to the north and south center line of

Section 32, T. 37 N., R. 11, E. of the 3d P. M., upon which said plat or map is shown the boundary lines of the route for said channel, said boundary lines being indicated in red on said plat and marked "Ordinance Boundary Line."

Section 5. That an ordinance entitled "An ordinance for the establishment of a right of way for a channel from the westerly reserve line of the Illinois and Michigan Canal in Section 14, T. [fol. 51] 37 N., R. 13, E. of the 3d P. M., to the east line of the W. $\frac{1}{2}$ of the N. E. $\frac{1}{4}$ of Section 23, T. 37 N., R. 13, E. of the 3d P. M., in Cook County, Illinois, and providing for the construction of such channel, passed May 4, 1904 (see pages 9908 and 9909 of Proceedings; and an ordinance entitled "An ordinance providing for the construction of a channel from the center line of the Main Channel of the Sanitary District of Chicago in Section 14, T. 37 N., R. 13, E. of the 3d P. M., to the east line of the west half of the N. E. $\frac{1}{4}$ of Section 23, T. 37 N., R. 13, E. of the 3d P. M., in Cook County, Illinois," passed July 20, 1904 (see pages 10056 and 10057 of Proceedings) be, and the same are hereby repealed.

Section 6. This ordinance shall be in force from and after its passage.

[fol. 52]

EXHIBIT H TO ANSWER

An ordinance for the establishment of a right of way from the easterly end of the right of way established by the Board of Trustees December 7, 1904, to the north and south center line of section 25, T. 37 N., R. 14 E., of the 3rd P. M. and for the construction and maintenance of a channel from the north and south center line of frac. section 32, T. 37 N., R. 14 E., of the 3rd P. M. north of Indian boundary line to the north and south center line of sec. 25, T. 37 N., R. 14 E., of the 3rd P. M.

Be it ordained by the Board of Trustees of the Sanitary District of Chicago.

Section 1. That there be and is hereby laid out and established a route for a channel and outlet for the Sanitary District of Chicago, which channel is hereby directed to be constructed and maintained, together with the necessary additions thereto within the limits of said route, which said route shall be over, upon and through certain lands lying in the County of Cook and State of Illinois and is described as follows, to-wit:

Beginning at a point in the north and south center line of frac. sec. 32, T. 37 N., R. 14 E. of the 3rd P. M. north of Indian boundary line, 300 feet north of the center of said frac. sec. 32; thence northeasterly to a point in the west line of the W. $\frac{1}{2}$ of the N. E. $\frac{1}{4}$ of said frac. sec. 32, 680 feet north of the south line of said N. E. $\frac{1}{4}$ frac. sec. 32; thence northeasterly to a point in the west line of the E. $\frac{1}{2}$ of said N. E. $\frac{1}{4}$ frac. sec. 32, 860 feet north of the

south line of said N. E. $\frac{1}{4}$ frac. sec. 32; thence northeasterly to a point in the west line of the east half of the E. $\frac{1}{2}$ of said N. E. $\frac{1}{4}$ frac. sec. 32, 910 feet north of the south line of said N. E. $\frac{1}{4}$ frac. sec. 32; thence northeasterly to a point in the west line of frac. sec. [fol. 53] 33, T. 37 N., R. 14, E. of the 3rd P. M. north of the Indian boundary line, 925 feet north of the east and west center line of said frac. sec. 33; thence southeasterly to a point in the Indian boundary line 660 feet distant in southwesterly direction from the intersection of the north line of frac. sec. 33, T. 37 N., R. 14 E. of the 3rd P. M. south of Indian boundary line; thence easterly to a point in the easterly line of the right of way of the Pittsburgh, Cincinnati, Chicago & St. Louis Railway Co. 530 feet in southeasterly direction distant from said north line of frac. sec. 33; thence northeasterly to a point in said north line of said frac. sec. 33, 500 feet west of the N. E. corner of the N. W. $\frac{1}{4}$ of said frac. sec. 33; thence northeasterly to a point in the west line of the S. E. $\frac{1}{4}$ frac. sec. 28, T. 37 N., R. 14 E. of the 3rd P. M. south of Indian boundary line 760 feet north of the S. W. corner of said S. E. $\frac{1}{4}$ frac. sec. 28; thence northeasterly to the N. W. corner of lot 1, County Clerk's division of S. E. $\frac{1}{4}$ frac. sec. 28, T. 37 N., R. 14 E. of the 3rd P. M. south of Indian boundary line; thence southeasterly and easterly along the southerly line of 127th street to its intersection with the westerly line of the right of way of the Illinois Central Railroad Co.; thence northeasterly to a point in the east line of frac. sec. 27, T. 37 N., R. 14 E. of the 3rd P. M. south of Indian boundary line 2,030 feet north of the S. E. corner of said frac. sec. 27; thence north along the east line of said frac. sec. 27 to its intersection with the east and west center line of said frac. sec. 27; thence southeasterly to a point 1,321.24 feet west and 1,545 feet north of the S. E. corner of the S. W. $\frac{1}{4}$ sec. 25, T. 37 N., R. 14 E. of the 3rd P. M.; thence northeasterly to a point in the north and south center line of said section 25, 1,650 feet north of said S. E. corner of said S. W. $\frac{1}{4}$ sec. 25; thence south along said north and south center line of said sec. 25 for a distance of 660 feet; thence southwesterly to a point 875 [fol. 54] feet north and 1,321.24 feet west of said S. E. corner of said S. W. $\frac{1}{4}$ sec. 25; thence south on a line 1,321.24 feet west of and parallel to said north and south center line of said Sec. 25, to the south line of said sec. 25; thence westerly along the south line of said sec. 25 and the south line of sec. 26, T. 37 N., R. 14 E. of the 3rd P. M. to the easterly line of the right of way of the Michigan Central Railroad Co.; thence northwesterly along said easterly line of the right of way of the Michigan Central Railroad Co. for a distance of 1,680 feet; thence southwesterly to the S. W. corner of frac. sec. 27 T. 37 N., R. 14 E. of the 3rd P. M. south of the Indian boundary line; thence southwesterly to a point in the easterly line of the right of way of the Pittsburgh, Cincinnati, Chicago & St. Louis Railway Co., 1,140 feet in northwesterly direction distant from the north and south center line of frac. sec. 33, T. 37 N., R. 14 E. of the 3rd P. M. south of Indian boundary line; thence westerly to the point of intersection of the east and west center line of frac. sec. 32,

T. 37 N., R. 14 E. of the 3rd P. M. north of the Indian boundary line with said Indian boundary line; thence along said east and west center line of frac. sec. 33 to the west line of said frac. sec. 33; thence westerly along the south line of the N. E. $\frac{1}{4}$ frac. sec. 32, T. 37 N., R. 14 E. of the 3rd P. M. north of Indian boundary line to the east line of the W. $\frac{1}{2}$ of the W. $\frac{1}{2}$ of the N. E. $\frac{1}{4}$ of said frac. sec. 32; thence southwesterly to a point in the north and south line of said frac. sec. 32, said point being the southeast corner of block 159 in the town of Calumet; thence north along said north and south center line of said frac. sec. 32, to the point of beginning.

Section 2. That a channel be constructed by the Sanitary District of Chicago, the center line of which shall be, approximately, the center line of the above established route. Said channel shall [fol. 55] have a width of seventy-two feet at the bottom and shall be so constructed as to have a depth and grade sufficient to insure a flow of twenty-two feet of water.

Section 3. That attached hereto, and made a part of this ordinance, is a plat entitled "Sanitary District of Chicago. Ordinance Map for the Right of Way of the Calumet-Sag Channel from the North and South Center line of Sec. 32, T. 37 N., R. 14 E. of the 3rd P. M., to the North and South Center line of sec. 25, T. N., R. 14 E. of the 3rd P. M.;" upon which said map or plat is shown the boundary lines of the route for said channel, said boundary lines being indicated in red on said plat and marked "Ordinance Boundary Line."

[File endorsement omitted.]

(Here follow exhibits to answer, marked side folio pages 56, 57, 58, 59, 60, 61, and 62)

[fol. 63] IN THE CIRCUIT COURT OF THE UNITED STATES, NORTH-
ERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

EXCEPTIONS OF COMPLAINANT TO THE ANSWER OF THE DEFEND-
ANT—Filed June 25, 1908

Now comes the above named complainant and takes its exceptions to the answer of the defendant herein as follows, to-wit:

First. The complainant excepts to the denial contained and purported to be made by said defendant in the second paragraph of said answer, as follows, to-wit:

"This defendant expressly denies that said Calumet river is a navigable river for its entire course, as charged in said bill of com-

FILED JUN 25 1908

Exhibit B to Answer

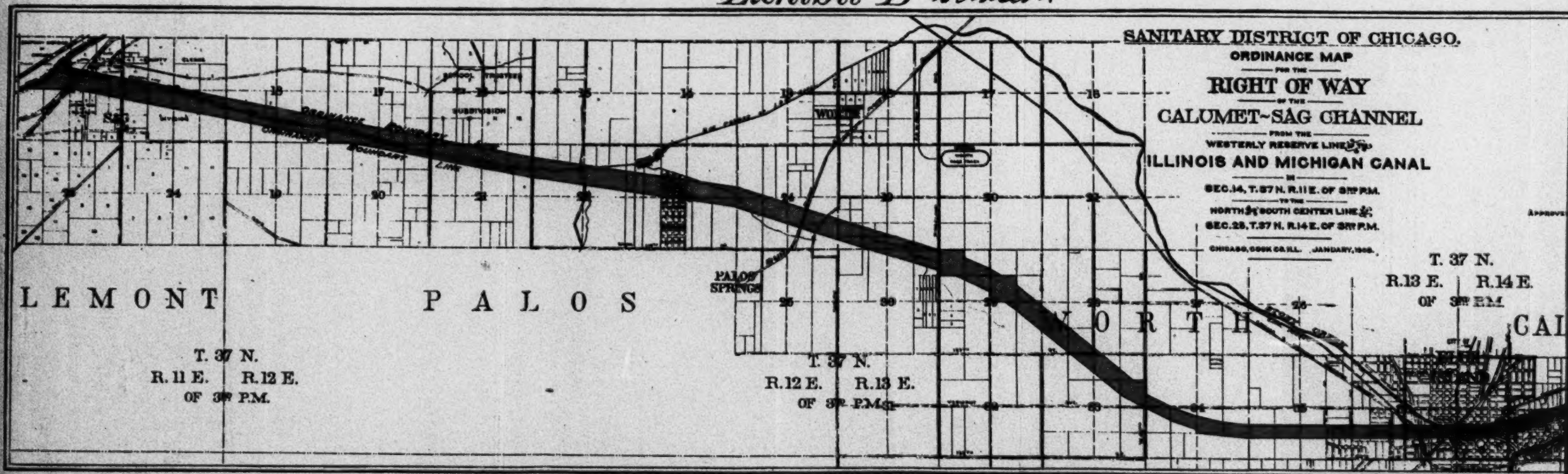
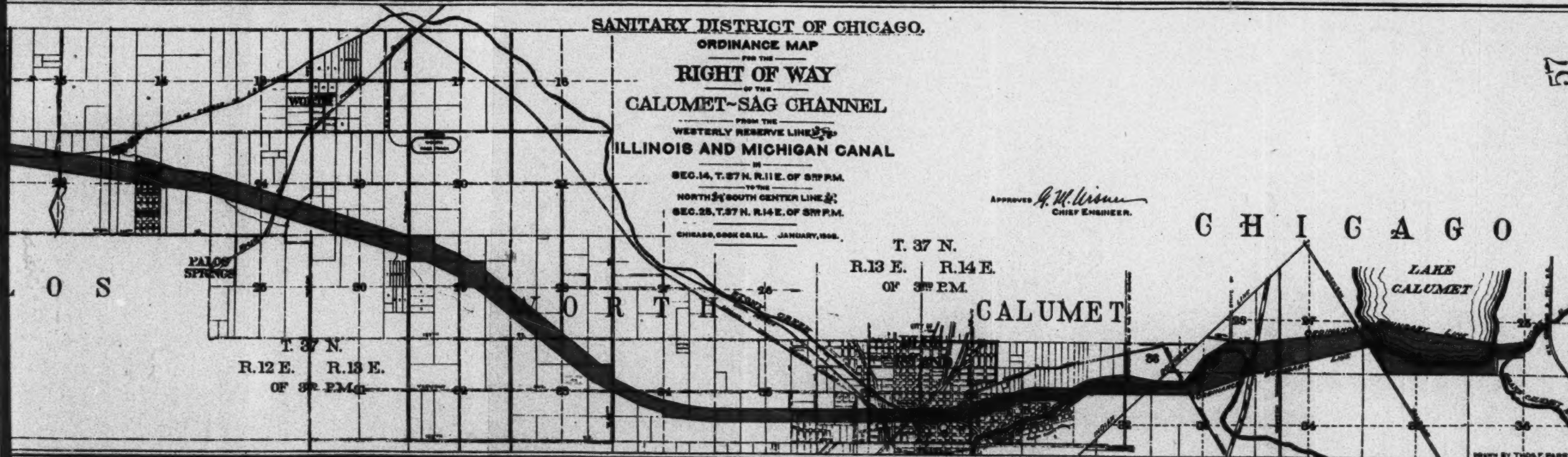


Exhibit B to Answer

Exhibit C



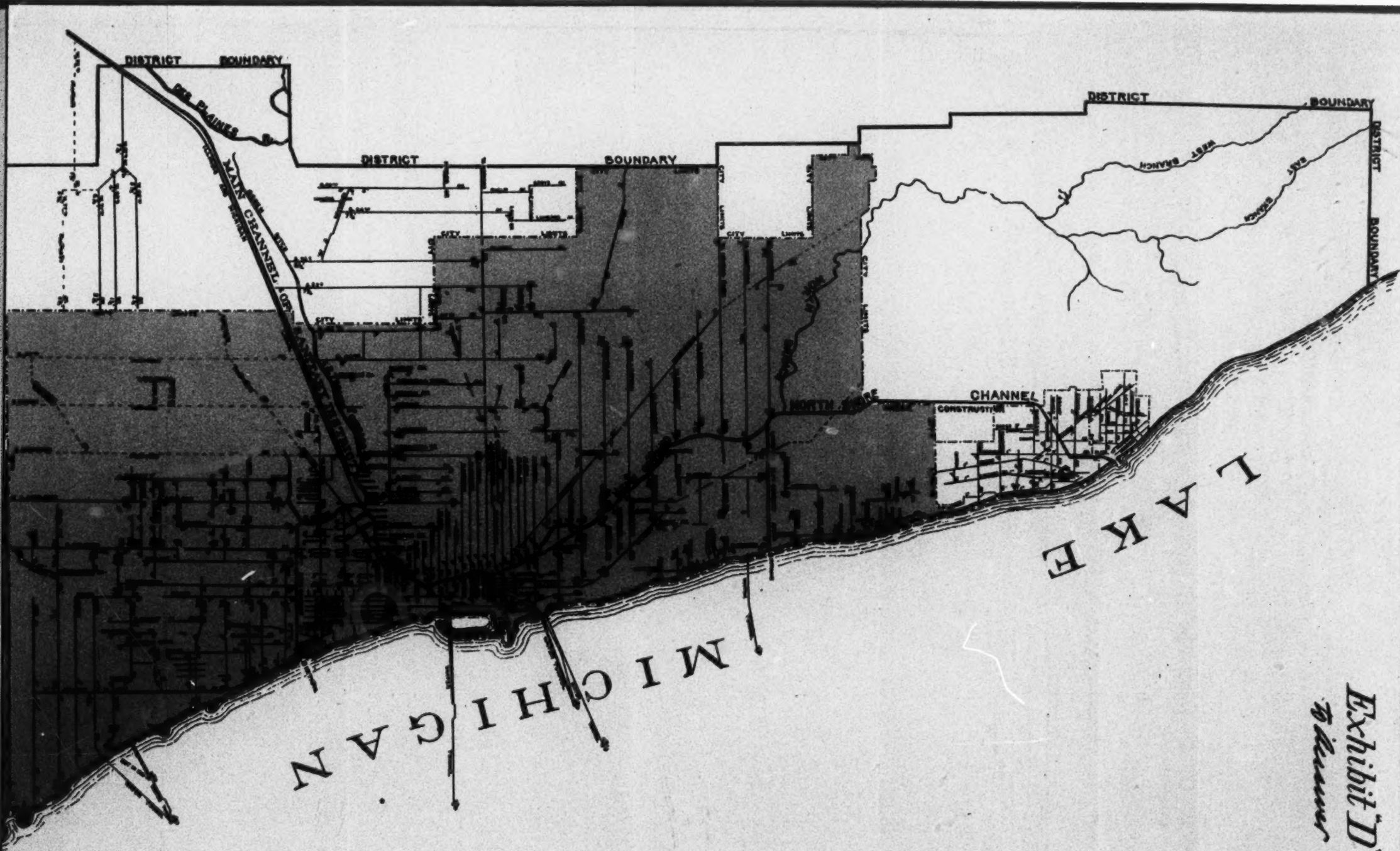


Exhibit D
to Illinois

*Exhibit E
to answer*

**Exhibit E
to answer**

**SANITARY DISTRICT OF CHICAGO.
MAP
Showing
THE SANITARY AND SHIP CANAL
THE ILLINOIS AND MICHIGAN CANAL
and the
CALUMET FEEDER
Chicago, January 1908**

59

J.T. Soderstrom, Eng.

SANITARY DISTRICT OF CHICAGO.
MAP
Showing
THE SANITARY AND SHIP CANAL
THE ILLINOIS AND MICHIGAN CANAL
and the
CALUMET FEEDER
Chicago, January 1908

59

J. F. Soderstrom, Del.

EXHIBIT F.

to Answer

MAP CALUMET RIVER

from
LAKE MICHIGAN TO JUNCTION

with
PROPOSED CALUMET SAG CHANNEL

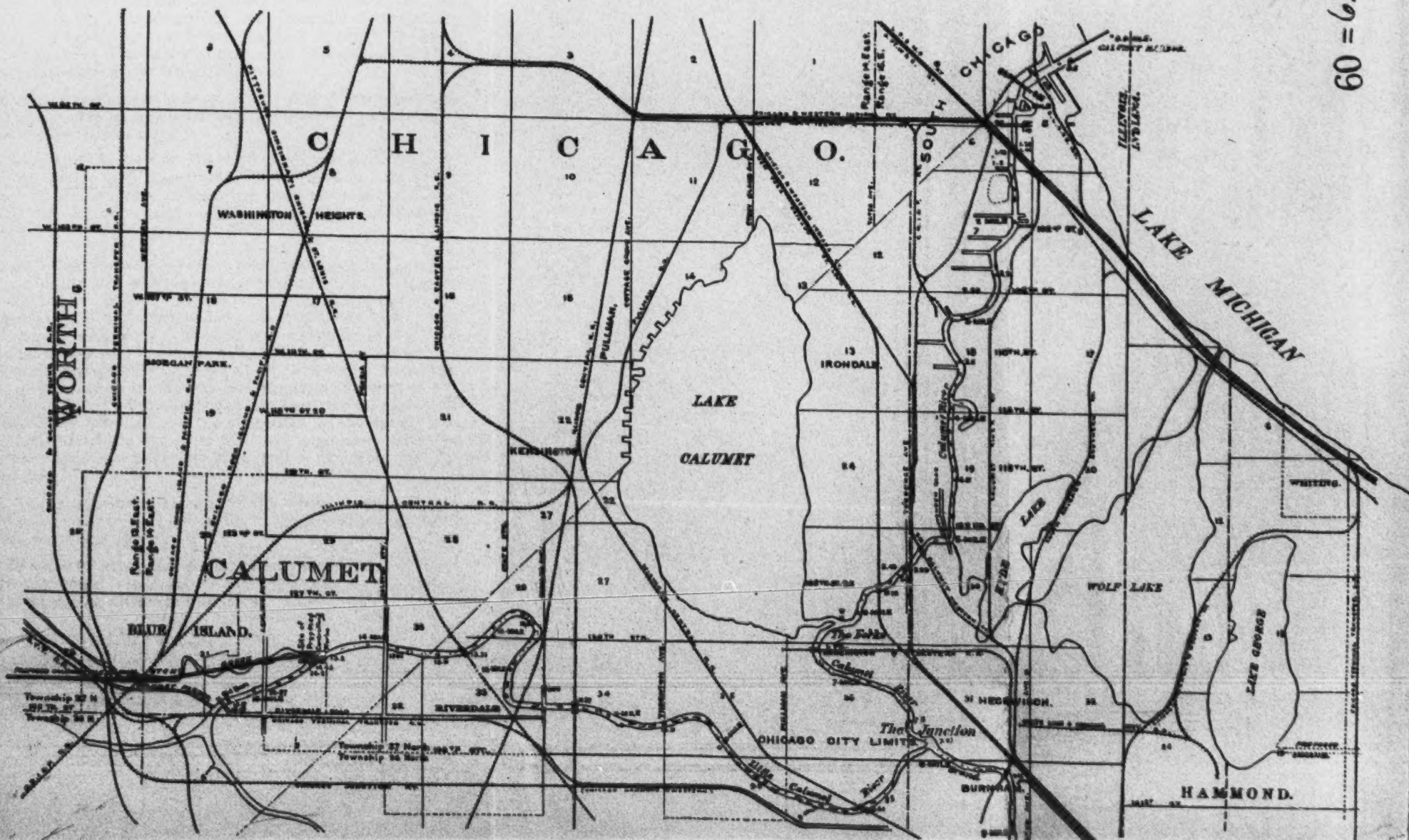
Scale 1/2 Mile = 1 Inch

Chicago, Dec. 1907

Depth and width of the Calumet River

	Depth	Channel width	Top width
from Lake Michigan to 106th St. Bridge	21.00	200.00	225 to 300.00
" 106th St. Bridge to 110th St.	20.00	200.00	230 to 280.00
" 110th St. to 122nd St.	21.00	200.00	250.00
" 122nd St. to Chittenden Bridge	17.00	180.00	250 to 330.00
" Chittenden Bridge to the Forks	15.00	150.00	250.00
" the Forks to Junction	8.00	60.00	115.00
" Junction to prop. Calumet Sag Channel	6.00	40.00	105 to 225.00

60 = 62



plaint, but, on the contrary, alleges that the length, depth and width [fol. 64] of said stream throughout its length is substantially as hereinafter more particularly set forth in the twenty-second paragraph hereof,"

on the ground that the same is evasive and insufficient and does not fully, directly and completely respond to the allegations of the complainant's bill of complaint on the same subject, as contained in the second paragraph of the bill of complaint herein; and on the further ground that it appears from other portions of the answer of said defendant, to-wit, the allegations in the twenty-second paragraph of said answer, together with Exhibit F, annexed to said answer and made a part thereof, that said denial of the navigability of said Calumet river is untrue and that said portion of said answer above set forth is insufficient and impertinent; and on the further ground that it appears from the allegations in the bill of complaint, which are admitted by the defendant, and from the allegations in the answer of the defendant, and from the facts of which the court will take cognizance, that said Calumet river is a navigable river and is navigable water of the United States.

Second. The complainant excepts to the denial contained and purported to be made by said defendant in the second paragraph of its said answer, as follows, to-wit:

"This defendant denies that the Little Calumet river from its mouth to the conjunction thereof with Stony Creek is a navigable river; but, on the contrary, alleges that said river between said points is of the dimensions and capacity hereinafter more fully set forth in the twenty-second paragraph hereof,"

on the ground that the same is evasive and insufficient and does not [fol. 65] fully, directly and completely respond to the allegations of the complainant's bill on the same subject, as contained in the second paragraph of said bill; and on the further ground that it appears from the allegations in the bill of complaint which are admitted in the answer, and by the allegations in said answer, that said denial as to the navigability of said Little Calumet river is untrue, and that said denial is insufficient and impertinent; and on the further ground that it affirmatively appears from the allegations of the bill which are admitted and the allegations in the answer and from the facts of which the court will take cognizance that said Little Calumet river is a navigable river, and is navigable water of the United States.

Third. The complainant excepts to the denial contained and purported to be made by said defendant in the second paragraph of said answer, as follows, to wit:

"This defendant further denies that said portion of said Calumet river above mentioned is traversed by any vessels whatsoever engaged in either interstate or intrastate commerce,"

on the ground that same is evasive and insufficient and does not fully, directly and completely respond to the allegations of the bill of complaint on the same subject; and on the further ground that said defendant does not deny that the Calumet river is traversed by vessels engaged in interstate commerce, but on the contrary the fact that the said Calumet river is traversed by vessels engaged in interstate commerce is substantially admitted by said answer, and that the facts with reference to the navigability and use of the Calumet river [fol. 66] as admitted by said defendant are sufficient for the purpose of granting the relief sought by the complainant.

Fourth. The complainant excepts to the denial contained and purported to be made by said defendant in the second paragraph of said answer, as follows, to-wit:

"This defendant denies that the Grand Calumet river from its origin in the State of Indiana to its confluence with the Little Calumet is a navigable river within the meaning of that term,"

on the ground that said denial is evasive, indefinite and does not completely respond to the allegations of the bill of complaint on the same subject; and on the further ground that said denial is shown by the other portions of said answer to be untrue.

Fifth. The complainant excepts to the denial contained and purported to be made by said defendant in the third paragraph of its answer, as follows, to-wit:

"This defendant denies the allegations made in paragraph 3 of the bill of complaint herein, that the construction of said waterway or channel as proposed will result in diverting and abstracting from Lake Michigan four thousand cubic feet of water per second,"

on the ground that said denial is evasive, insufficient, does not respond to the allegations of the bill of complaint on the same subject, and is shown by other portions of said answer to be untrue; and on the further ground that it affirmatively appears from other portions of said answer that a large quantity of water will be abstracted from Lake Michigan through the proposed channel, and that said statements in said answer are a practical admission of the allegations of [fol. 67] the bill of complaint as to the diversion of water from Lake Michigan.

Sixth. The complainant excepts to the denial contained and purported to be made by the defendant in the fourth paragraph of said answer, as follows, to wit:

"This defendant expressly denies the allegation contained in paragraph 4 of the bill of complaint herein, that the diversion and abstraction of the waters from Lake Michigan contemplated by this defendant through its proposed channel and waterway will lower the level of the waters of the Great Lakes and will diminish the navigable capacity of said waters or the harbors thereof,"

on the ground that said denial is evasive, insufficient, and does not fully, directly and completely respond to the allegations in the bill of complaint on the same subject, and that it appears from the allegations in the bill of complaint which are admitted by the defendant, and from the allegations in the answer of the defendant and from the facts of which the court will take cognizance, that said denial is untrue; and on the further ground that the finding and decision of the Secretary of War that the construction of said proposed channel and waterway will diminish the navigable capacity of Lake Michigan, and will alter and modify the condition and capacity thereof, is final and conclusive as against the defendant.

Seventh. The complainant excepts to the following portion of the fourth paragraph of said answer, to wit:

"This defendant expressly denies that interstate or any other commerce will be, to any extent, injured or interfered with by the [fol. 68] said diversion and abstraction of waters from the Great Lakes, or by the construction and maintenance of the Calumet-Sag Channel,"

on the ground that the same is impertinent and does not respond to any allegation in the bill of complaint, and that the matters therein set forth constitute no defense to the relief sought in the bill of complaint.

Eighth. The complainant excepts to the following portion of the fourth paragraph of said answer, as follows, to-wit:

"And denies that the construction of said channel will have a tendency to undo and annul the orders of Congress, as expressed in its various river and harbor bills appropriating funds for improving the rivers and harbors; and expressly denies that the construction of said waterway and channel will alter and modify the conditions of the rivers and harbors of the United States, or any of them, and substantially and seriously impede, injure and obstruct the navigation of the Great Lakes, and the harbors and channels thereof, or the rivers flowing thereinto, as alleged in said paragraph 4; but, on the contrary, the defendant alleges that the construction and maintenance of said waterway and channel as proposed, and the diversion of water through the same as proposed, will not in any wise affect the navigable capacity of the Great Lakes, or the harbors and channels connected therewith, or the rivers flowing into the same,"

on the ground that it appears from the other portions of said answer that each of the purported denials in the portion thereof last above set forth is untrue, and that said portion of said answer herein set forth is sham, evasive and insufficient, and does not fully and completely respond to the allegations of the bill of complaint on the same subject; and on the further ground that it affirmatively appears from the allegations of the bill which are admitted, and

from the allegations in the answer and from the facts of which the court will take cognizance that the construction of said proposed channel and waterway will affect the navigable capacity and condition of said Lake Michigan, and its harbors and channels, and the rivers flowing into it; and on the further ground that the finding and decision of the Secretary of War set forth in said bill and answer as to the effect of the construction and maintenance of said proposed waterway and channel is final and conclusive as against the defendant.

Ninth. The complainant excepts to the following portion of the fourth paragraph of said answer, to-wit:

"[The defendant alleges that the construction and maintenance of said water-way and channel as proposed] will not interfere with, or in any degree injure, interstate commerce, or any other commerce; but on the contrary, as hereinafter shown, will be to the interest of interstate commerce and in accordance with the policy and laws of the United States,"

on the ground that the same is impertinent, does not respond to any of the allegations of the bill of complaint, is merely the statement of erroneous conclusions of law, and is shown by the allegations of the bill which are admitted and by the other allegations of the answer and by the facts of which the court will take cognizance to be untrue; and on the further ground that the finding and decision of the Secretary of War as set forth in the bill and answer are final and conclusive as against the defendant.

[fol. 70] Tenth. The complainant excepts to the allegations contained in the fifth paragraph of said answer on the ground that the purported denial therein is merely the statement of an erroneous conclusion of law; and on the further ground that there is no statute of the United States which authorizes and provides for the construction and maintenance of said channel and water-way, and that the allegation in said paragraph with reference to the existence of such a law is impertinent.

Eleventh. The complainant excepts to the allegations contained in the sixth paragraph of said answer for the reason that the same are insufficient, evasive, and do not fully and completely respond to the allegations of the bill of complaint on the same subject. The averment in the bill is that the construction and maintenance of said channel will lower the level of the Calumet, Little Calumet and Grand Calumet rivers; whereas the defendant in said answer merely denies that the construction of said channel will lower the level of the Little Calumet river. The defendant does not deny that the construction of said channel will alter and modify the course, condition and capacity of said rivers, as charged in said bill, but on the contrary it is admitted in said answer that the construction and maintenance of said channel will result in changing the course of said rivers.

Twelfth. The complainant excepts to the denial contained and purported to be made in the seventh paragraph of said answer, as follows, to-wit:

"This defendant expressly denies the allegation in said (7th) paragraph contained that the construction and maintenance of the pro-[fol. 71] posed water-way, as planned by the defendant, and its consequent diversion of the water from Lake Michigan, would lower the levels of all of said waters, or any of them; and further expressly denies that such construction and maintenance of said channel would injure or impede navigation in the harbors and channels of said waters, or in any of them."

on the ground that the same is evasive, incomplete, and insufficient, and does not fully and completely respond to the allegations contained in the bill of complaint on the same subject; and on the further ground that it appears from the allegation of the bill which are admitted by the defendant, and from the allegations in the answer, and from the facts of which the court will take cognizance, that said purported denial is untrue, and that the effect of the construction and maintenance of said proposed channel will be necessarily to alter and modify the condition and capacity of said Lake Michigan; and on the further ground that the finding and decision of the secretary of war set forth in the bill, and answer, with reference to the effect of the construction of said proposed channel, are final and conclusive as against the defendant.

Thirteenth. The complainant excepts to the following portion of the eighth paragraph of said answer, as follows, to wit:

"This defendant denies that this act (the act of May 3, 1899) has any binding force on this defendant; or that said act in any-wise prohibits the construction and maintenance of the channel or waterway proposed to be constructed by this defendant; or that the same is a constitutional or valid enactment,"

on the ground that the same is merely the statement of erroneous [fol. 72] conclusions of law, and is impertinent; and on the further ground that said act therein referred to is a valid and constitutional enactment, is binding upon the defendant, and prohibits the construction and maintenance of the channel and water-way proposed to be constructed by said defendant in the absence of the compliance by the defendant with the requirements and conditions therein set forth.

Fourteenth. The complainant excepts to the following portion of the ninth paragraph of said answer as follows, to wit:

"This defendant expressly denies that by said application it admitted the jurisdiction of the secretary of war in such matters,"

on the ground that it is merely the statement of an erroneous conclusion of law, and is impertinent; and on the further ground that

there is no proper denial of the specific allegations of the bill of complaint to the effect that said defendant did submit itself to the jurisdiction of said secretary of war for the purpose of the determination of the effect of the construction and maintenance of said proposed channel upon the condition and capacity of the navigable waters of the United States, described in said bill and answer.

Fifteenth. The complainant excepts to the following portion of the ninth paragraph of said answer, as follows, to wit:

"Or that it required such permit from said secretary of war to construct and maintain said channel,"

on the ground that the same is the statement of an erroneous conclusion of law, and is impertinent; and on the further ground that the construction of the proposed channel as described in said answer [fol. 73] would necessarily interfere with, alter and modify the condition and capacity of the navigable waters of the United States described in the bill and answer, and that the authorization by the secretary of war required by statute is a condition precedent to the lawful construction of said channel; and on the further ground that the finding and decision of said secretary of war, refusing to permit the construction of said proposed channel, are final and conclusive as against the defendant.

Sixteenth. The complainant excepts to the following portion of the ninth paragraph of said answer, to wit:

"But on the contrary, alleges that it made such application to said secretary of war purely as a matter of comity and in order to promote and maintain the spirit of harmony which it believed should obtain between the Federal Government and the various state and local governments of the United States; all of which more fully appears from a statement filed with the secretary of war at the time of making said application, a part of which is in words and figures as follows, to wit:

"That while insisting upon the right as a matter of right, we are entitled, nevertheless, to a permit from the secretary of war; to evidence that there exists between the two governments that 'spirit of harmony and conciliation' which, in the words of Chief Justice Marshal, in *Gibbons v. Ogden* (9 Wheaton, 1), 'ought always to characterize the conduct of governments standing in the relation which that of the Union and those of the states bear to each other'; and to further evidence on the part of said governments that 'frank and candid co-operation for the general good' spoken of by Justice [fol. 74] Johnson in the same case, 'which should always take place where there is a seeming blending of the power of the two governments and an apparent conflict,'"

on the ground that same is impertinent, and is not responsive to any of the allegations of the bill of complaint; and on the further ground that the matters therein set forth if true would not justify the wrongs alleged in the bill of complaint to have been committed

by the defendant, or in anywise constitute a defense against the relief sought by the bill of complaint.

Seventeenth. The complainant excepts to the following portion of the eleventh paragraph, to wit:

"But this defendant denies that said law has any application to the work contemplated by said defendant, or that it has any binding force or effect in this case."

on the ground that same is a mere statement of an erroneous conclusion of law and is impertinent; and on the further ground that it appears from the facts stated in the bill and admitted by the defendant, and from the allegations in the answer, and from the facts of which the court will take cognizance, that it is necessary for the construction of said channel to be authorized by the secretary of war, pursuant to statute; and on the further ground that said statute is a valid and constitutional enactment, and is applicable to the facts herein as admitted by the defendant.

Eighteenth. The complainant excepts to the allegations contained in the twelfth paragraph of the bill of complaint, on the ground that the purported denial therein involves the statement of an erroneous conclusion of law; and on the further ground that there is no congressional legislation authorizing the construction and [fol. 75] maintenance of said channel, and the diversion of the waters of said Lake Michigan, and that the averment in said paragraph to that effect is undue and impertinent.

Nineteenth. The complainant excepts to the thirteenth paragraph of said answer on the ground that it is merely the statement of an erroneous conclusion of law; and is impertinent; and on the further ground that there is no law authorizing the construction and maintenance of said proposed channel, and that the finding and decision of the secretary of war, made pursuant to statute, denying to the defendant the right to construct and maintain said proposed channel, are final and conclusive as to the defendant.

Twentieth. The complainant excepts to the following portion of the fourteenth paragraph of said answer, to wit:

"This defendant expressly denies that the construction and maintenance thereof will be to the manifest or irreparable injury of the United States, or to interstate and foreign commerce; but, on the contrary, alleges that the construction and maintenance of said channel and waterway will benefit both state and interstate commerce,"

on the ground that it appears from the allegations in the bill which are admitted by the defendant to be true, and from the allegations in the answer, that said purported denial is untrue, and that it is insufficient and impertinent; and on the further ground that the finding and decision of the secretary of war, with reference to the construction and maintenance of said channel, made pursuant to the statute, are final and conclusive against the defendant.

Twenty-first. The complainant excepts to all of the allegations [fol. 76] in the fifteenth paragraph of said answer on the ground that each of said allegations is impertinent; and on the further ground that said allegations, if true, would not justify the acts of the defendant charged in the bill, nor would they constitute a defense against the relief sought by the bill of complaint; and on the further ground that said allegations involve an erroneous construction of the statutes of the United States and erroneous conclusions of law.

Twenty-second. The complainant excepts to all of the allegations in the sixteenth paragraph of said answer on the ground that each of said allegations is impertinent, and has no relation whatever to any of the issues involved in this case, and that said allegations if true, would not justify the acts of the defendant charged in the bill of complaint, nor would they constitute any defense against the relief sought in said bill; and on the further ground that said allegations involve an erroneous construction and application of the statutes of the United States and of the State of Illinois.

Twenty-third. The complainant excepts to all of the allegations in the seventeenth paragraph of said answer on the ground that each of said allegations is impertinent and has no relation whatever to the issues involved in this case, and that said allegations if true, would not justify the acts of the defendant charged in the bill of complaint, nor would they constitute any defense to the relief sought in said bill; and on the further ground that said allegations involve an erroneous construction and application of the statutes of the United [fol. 77] States and of the State of Illinois.

Twenty-fourth. The complainant excepts to all of the allegations in the eighteenth paragraph of said answer on the ground that each of said allegations is impertinent, not responsive to any of the allegations in the bill of complaint, and in no way relates to any of the issues involved in this case; and that said allegations if true, would not justify the acts of the defendant charged in the bill of complaint, nor would they constitute any defense against the relief sought in said bill; and on the further ground that said allegations involve an erroneous construction and application of the statutes of the United States and of the State of Illinois.

Twenty-fifth. The complainant excepts to all of the allegations in the nineteenth paragraph of said answer on the ground that each of said allegations is impertinent, and is not responsive to any of the allegations in the bill of complaint, and does not relate in any way to the issues involved in this case, and that said allegations if true, would not justify the acts of the defendant charged in the bill of complaint, nor constitute a defense against the relief sought in said bill; and on the further ground that said allegations involve an erroneous construction and application of the statutes of the United States and of the State of Illinois.

Twenty-sixth. The complainant excepts to all of the allegations in the twentieth paragraph of said answer on the ground that each

of said allegations is impertinent, is not responsive to any of the [fol. 78] allegations in said bill of complaint, and does not in any way relate to the issues involved in this case, and that said allegations if true, would not justify the acts of the defendant charged in the bill of complaint, nor constitute a defense against the relief sought in said bill; and on the further ground that said allegations involve an erroneous construction and application of the statutes of the United States and of the State of Illinois.

Twenty-seventh. The complainant excepts to that portion of the twenty-first paragraph of said answer as follows, to wit:

"This defendant says that it expressly denies that the construction and maintenance of said proposed channel would in anywise affect the levels of the Great Lakes, and the channels and harbors and rivers connected therewith,"

on the ground that it appears from the allegations in the bill which are admitted by the defendant, and from the allegations in the answer herein, and from the facts of which this court will take cognizance, that said purported denial is untrue; and on the further ground that said portion of said paragraph is impertinent, insufficient and does not properly respond to any of the averments in said bill of complaint.

Twenty-eighth. The complainant excepts to the following portion of the twenty-first paragraph of said answer, to wit:

"Or that it will in anywise injure, interfere with or be to the detriment of the commerce thereon,"

on the ground that same is impertinent, is not responsive to any allegation in the bill of complaint, and is shown by the allegations [fol. 79] of the bill which are admitted, and by the allegations in the answer, to be untrue; and on the further ground that the finding and decision, of the secretary of war with reference to the matters therein set forth, are final and conclusive against the defendant.

Twenty-ninth. The complainant excepts to the following portion of the twenty-first paragraph of said answer, to wit:

"And this defendant expressly denies that the construction and maintenance of the proposed channel will in anywise affect the navigable capacity of the Little Calumet, or Grand Calumet rivers, and alleges that it will not in anywise affect, alter, modify or change said Little Calumet river, other than as herein specifically set forth, which this defendant alleges is to the benefit of said river, and to the commerce thereon, and not to the detriment thereof,"

on the ground that the same is evasive, indefinite, insufficient, and does not fully respond to the allegations of the bill of complaint on the same subject; and on the further ground that it appears from the allegations of the bill which are admitted by the defendant, and from the allegations in the answer, that said purported denial is

untrue; and on the further ground that it affirmatively appears from the admissions in said answer that the effect of the construction of said channel will be to alter and modify and change the direction of the course of said Little Calumet river.

Thirtieth. The complainant excepts to all of the allegations in the twenty-third paragraph in said answer, on the ground that each of said allegations is impertinent, is not responsive to any allegation [fol. 80] in the bill of complaint, and does not relate in any way to the issues involved in this case; and on the further ground that the power to regulate commerce among the states is conferred, not upon the governments of the respective states, but upon the United States; that Congress in the exercise of its power has legislated with reference to the matters covered by the bill of complaint and the answer herein; that said legislation is valid, constitutional and binding upon the defendant, and that the effect of the construction of said proposed channel upon interstate commerce is a matter for determination, not by the authorities of the State of Illinois, but by the federal authorities, upon whom that power has been conferred by Congress.

Thirty-first. The complainant excepts to all of the allegations in the twenty-fourth paragraph of said answer, on the ground that each of said allegations is impertinent, and not responsive to any of the allegations in said bill of complaint, and that said allegations if true, would not justify any of the acts of the defendant complained of in the bill of complaint, nor constitute a defense against the relief sought in said bill; and on the further ground that it is not alleged in said paragraph, nor in any other portion of said answer, that the local government of Illinois could not make provision for the drainage and disposal of said sewerage in some adequate manner without violating the statutes of the United States, passed pursuant to the power to regulate commerce conferred upon Congress by the constitution, and without defying the lawful orders of the department of war made in the premises.

[fol. 81] Thirty-second. The complainant excepts to each and every one of the purported denials of the material allegations of the bill of complaint, on the ground that each of said purported denials is shown by the allegations of the bill which are admitted by the defendant, and by the other allegations of the answer, and by the facts of which the court will take judicial notice to be untrue, and is therefore insufficient; and on the further ground that there is no sufficient and complete denial of any one of the material allegations of said bill.

Thirty-third. The complainant excepts to said answer on the ground that there is no sufficient denial of the allegations in the bill of complaint to the effect that by the construction and maintenance of said proposed channel the defendant will divert a large quantity of water from Lake Michigan.

Thirty-fourth. The complainant excepts to said answer on the ground that there is no sufficient denial of the allegations of the bill to the effect that by the construction and maintenance of said proposed channel the defendant will alter and modify the course of the Calumet and Little Calumet rivers, and cause the water in said rivers to flow in a direction different from that in which it now flows.

Thirty-fifth. The complainant excepts to said answer on the ground that the defendant has not therein by sufficient averments denied the material allegations of said bill of complaint, entitling the complainant to the relief therein sought.

Thirty-sixth. The complainant excepts to said answer on the ground that it does not set up any matter constituting a defense to [fols. 82 & 83] the matters alleged in the bill of complaint.

Wherefore, the complainant comes and in all particulars aforesaid excepts to the answer of the said defendant on the grounds alleged, that the same is evasive, untrue, imperfect, insufficient, irrelevant, and impertinent; and prays that said irrelevant and impertinent portions of said answer hereinabove pointed out may be expunged from said answer, and that as to the remaining portions of said answer to which exceptions have been taken, said defendant may be compelled to put in a full, complete and sufficient answer with reference to the matters therein referred to; and that said complainant may have such other relief in the premises as to the court may seem proper.

Charles J. Bonaparte, Attorney-General of the United States;
Edwin W. Sims, United States Attorney; James H. Wilkerson, Special Assistant United States Attorney, Solicitors
for the United States.

[File endorsement omitted.]

[fol. 84] IN THE DISTRICT COURT OF THE UNITED STATES, NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted] •

BILL OF COMPLAINT—Filed October 6, 1913

[fol. 85] To the Honorable the Judges of the District Court of the United States for the Northern District of Illinois, Eastern Division, in Chancery Sitting:

Your orator, The United States of America, by James G. McReynolds, its Attorney General, and James H. Wilkerson, its attorney for the Northern District of Illinois, brings this, its bill of complaint, against The Sanitary District of Chicago, defendant, and respectfully alleges and represents unto your Honors as follows:

First: That defendant, The Sanitary District of Chicago, is a municipal corporation, organized and existing under and by virtue of an act of the Legislature of the State of Illinois, approved May 29, 1889, in force July 1, 1889, and entitled, "An Act to create Sanitary Districts and to remove obstructions in the Desplaines and Illinois Rivers"; that it has its principal office in the City of Chicago, in the State of Illinois, and that it is a citizen of the State of Illinois.

Second. That the Chicago river is situated in the County of Cook and State of Illinois and consists of a main river originally flowing in a generally easterly direction emptying into Lake Michigan, said main river being formed by two branches known as the north branch and the south branch of said Chicago river, and the said south branch being divided into two forks, known as the west fork and the south fork.

Third. That the said Chicago river, including both the north branch and the south branch, and the west fork and the south fork of the south branch, is a navigable water of the United States.

Fourth. That the United States has appropriated and expended a large sum of money, to wit, \$4,216,066.36, in improving the navigability of said river and the harbor at the mouth of the same.

[fol. 86] Fifth. That in and by section 10 of an act of Congress, approved March 3, 1899, and entitled "An Act making appropriations for the construction, repair and preservation of certain public works on rivers and harbors, and for other purposes," it is provided as follows:

"That the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is hereby prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of War; and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition or capacity of any port, roadstead, haven, harbor, canal, lake, harbor of refuge or inclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to the beginning of the same."

which said law has remained and been in full force and effect ever since its passage and still remains in full force and effect.

Sixth. That heretofore, to wit, prior to the 8th day of May, 1899, defendant applied to the Secretary of War of the United States, for permission to reverse the current and the flow of the said Chicago

river and to divert and abstract a certain quantity of water from Lake Michigan through said Chicago river and through a certain canal which was constructed and being constructed by defendant; and thereafter, to wit, on the 8th day of May, 1899, the Secretary of War issued a permit to the defendant to reverse the current and flow of the said Chicago river and to divert and abstract from Lake Michigan not to exceed 300,000 cubic feet per minute, reserving the right to make such changes as the Secretary of War should see fit in the interests of navigation and property rights. A copy of said permit is attached hereto as Exhibit "A" and is referred to and made a part hereof with like effect as if set out in full herein.

Seventh. That thereafter, on, to wit, April 9, 1901, the Secretary of War ordered defendant to reduce the flow through the Chicago [fol. 87] river to 200,000 cubic feet per minute, a copy of which order is attached hereto as Exhibit "B" and is referred to and made a part hereof with like effect as if set out in full herein.

Eighth. That thereafter, defendant applied to the Secretary of War and in compliance with said application said Secretary of War, on, to wit, July 23, 1901, modified the permit and order theretofore issued and issued a permit to defendant to flow 300,000 cubic feet of water per minute between the hours of 4:00 P. M. and 12:00 P. M. midnight, a copy of which permit is attached hereto as Exhibit "C" and is referred to and made a part hereof with like effect as if set out in full herein.

Ninth. That subsequently thereto defendant applied for and obtained from the Secretary of War, on to wit, the 5th day of December, 1901, a permit to flow 250,000 cubic feet per minute throughout the twenty-four hours of the day, copy of which permit is attached hereto as Exhibit "D" and is referred to and made a part hereof with like effect as if set out in full herein.

Tenth. That subsequently thereto, defendant applied for and obtained from the Secretary of War, on, to wit, the 17th day of January, 1903, a permit to increase the flow through the Chicago river from 250,000 to 350,000 cubic feet per minute until the 31st day of March, 1903, after which date the flow to be reduced to 250,000 cubic feet per minute as theretofore, a copy of which permit is attached hereto as Exhibit "E" and is referred to and made a part hereof with like effect as if set out in full herein.

Eleventh. That subsequently, on, to wit, the 28th day of November, 1906, defendant made application to the Secretary of War for permission to construct a canal connecting the Calumet river with the main channel of the Sanitary District canal at what is known as Sag Station, and to reverse the flow of the Calumet river, and thereafter, on, to wit, the 14th day of March, 1907, the said Secretary of War denied the said application.

Twelfth. That subsequently thereto, defendant applied for and obtained from the Secretary of War, on, to wit, the 11th day of

September, 1907, a permit to construct a canal connecting Lake Michigan at Wilmette, Illinois, with the north branch of the Chicago river upon the condition that the total diversion of water from [fol. 88] Lake Michigan through the Chicago river should not exceed the amount already authorized by the War Department, to wit, 250,000 cubic feet per minute.

Thirteenth. That subsequently thereto, defendant applied for and obtained from the Secretary of War, on, to wit, the 27th day of June, 1910, a permit authorizing it to construct a canal connecting the Calumet with the main channel of the Chicago Drainage canal at Sag Station and to divert and abstract water from Lake Michigan through said canal, and providing, among other things, that the amount of water withdrawn from Lake Michigan through the Chicago river and the Calumet river together should not exceed the total amount of 250,000 cubic feet per minute, the amount previously authorized to be withdrawn through the Chicago river alone.

Fourteenth. That thereafter, on, to wit, the 5th day of February, 1912, defendant applied to the Secretary of War for permission to withdraw and divert from Lake Michigan through the Chicago river and Calumet river, not to exceed 10,000 cubic feet of water per second, or 600,000 cubic feet per minute, copy of which application is attached hereto, as Exhibit "F" and is referred to and made a part hereof with like effect as if set out in full herein.

Fifteenth. That thereafter, on to wit, the 8th day of January, 1913, the Secretary of War of the United States, refused said application of February 5, 1912, copy of which said refusal is attached hereto as Exhibit "G" and is referred to and made a part hereof with like effect as if set out in full herein.

Sixteenth. Your orator further represents that defendant has for a long period of time diverted and abstracted from Lake Michigan and caused to flow through the Chicago river and is at the present time diverting and abstracting from Lake Michigan and causing to flow through the Chicago river from 400,000 to 600,000 cubic feet of water per minute, which amount is greatly in excess of the amount so permitted to be diverted and abstracted from Lake Michigan to flow through the Chicago river by said Secretary of War as hereinbefore set out and is in direct violation of the permits of said Secretary of War which limits the said flow to 250,000 cubic feet per minute; that defendant plans, intends and threatens to continue to divert from Lake Michigan through the Chicago river from 400,000 to 600,000 cubic feet per minute in violation of the permits and orders of the Secretary of War.

Seventeenth. Your orator further represents that the Congress of the United States has not authorized the diversion of any of such [fol. 89] waters through the Chicago river, and that the Chief of Engineers has not recommended the said diversion of waters through the Chicago river in excess of 250,000 cubic feet per minute, nor

has the Secretary of War authorized the diversion of the waters of Lake Michigan through the said Chicago river in excess of 250,000 cubic feet per minute, but on the contrary has refused so to do, and has refused to authorize the diversion of any of such waters in excess of 250,000 cubic feet per minute through said river, as is more fully set out in paragraph fifteenth, hereof, and that the total amount of water which said defendant can legally divert or abstract from Lake Michigan in any manner cannot exceed 250,000 cubic feet per minute.

Eighteenth. Your orator further represents on information and belief that the diversion and abstraction of the waters of Lake Michigan into the Chicago river in excess of 250,000 cubic feet per minute has lowered and will continue to lower the level of the water of Lake Michigan, Lake Huron, Lake St. Clair, Lake Erie, Lake Ontario, Sault Ste. Marie, St. Mary's river, St. Clair river, Detroit river, Niagara river, St. Lawrence river, and all the harbors, channels, canals and rivers connected therewith, all of which are navigable waters of the said United States, and will thus injure and diminish and create an obstruction to the navigable capacity of all said waters.

Nineteenth. That said waters have been deepened and improved under great expense of the United States under authority of the Congress of the United States, and that the diversion and abstraction of the waters of Lake Michigan in excess of the permits hereinbefore set forth, will have a tendency to undo and annul the orders of Congress as expressed in the various rivers and harbors acts appropriating funds for improving harbors and channels in the above named waters and channels connected therewith.

Twentieth. That the said diversion and abstraction of the waters of Lake Michigan through the Chicago river in excess of the permits of the United States as aforesaid, will alter and modify the condition and capacity of the channel of the said Chicago river which is a channel of a navigable water of the United States.

Twenty-first. That the said diversion and abstraction of the waters of Lake Michigan through the Chicago river in excess of the permits of the United States as aforesaid, will alter and modify the condition and capacity of Lake Michigan, Lake Huron, Lake St. [fol. 90] Clair, Lake Erie, Lake Ontario, Sault Ste Marie, St. Mary's river, St. Clair river, Detroit river, Niagara rivers and St. Lawrence river and the ports, roadsteads, havens, harbors, canals and harbors of refuge connected with the above named waters.

Twenty-second. Your orator further represents that defendant cannot lawfully continue to divert and abstract the waters of Lake Michigan as it now does and threatens to do as aforesaid without the recommendation of the Chief of Engineers of the United States and permission of the Secretary of War of the United States in excess of the permits hereinbefore referred to limiting the said flow to 250,000 cubic feet per minute, yet the defendant notwithstanding it has no right so to do, plans, intends and threatens to continue the diversion

of the waters of Lake Michigan in excess of the amount so permitted and authorized by the Secretary of War, to the manifest and irreparable injury of your orator and its interstate navigation and commerce, unless restrained by the injunction of this Honorable Court.

Forasmuch, therefore, as your orator is remediless in the premises by the rules of the common law, and can have adequate relief only in a court of equity, and to the end that the said Sanitary District of Chicago, a municipal corporation as aforesaid, which is made defendant to this your orator's bill of complaint may full, true and perfect answer make to all and singular the matters and things hereinbefore stated and charged (but not under oath, its answers under oath being hereby expressly waived), your orator files this bill of complaint and prays your Honors forthwith to grant a provisional or preliminary writ of injunction directed to the said defendant, its Board of Trustees, officers, agents, attorneys, representatives, employees and servants, and all other persons, acting, or claiming or assuming to act, under its authority, enjoining it, and each of its Board of Trustees, officers, agents, attorneys, representatives, employees and servants, and each of the other persons aforesaid, from diverting or abstracting any waters from Lake Michigan over and above and in excess of 250,000 cubic feet per minute as already authorized by said Secretary of War until such time as your honors shall appoint and direct for the final hearing herein, and upon such final hearing to make such injunction perpetual.

And may it please your honors to grant such other, further and different relief in the premises as equity may require and to your honors may seem meet.

[fol. 91] And your orator prays that a writ of subpoena may issue to the said defendant, The Sanitary District of Chicago, commanding it, under a penalty and at a time and place to be therein stated, to appear and answer all and singular the matters hereinbefore stated and charged, and abide by and perform such orders as the court may make in the premises.

And your orator will ever pray.

James C. McReynolds, Attorney General of the United States.

By Direction of the Attorney General: James H. Wilkerson, United States Attorney for the Northern District of Illinois.

[fol. 92] EXHIBIT "A" TO BILL OF COMPLAINT

"Whereas, by Section 10 of an act of Congress approved March 3, 1899, entitled 'An Act making appropriations for the construction, repair and preservation of certain public works, on rivers and harbors, and for other purposes,' it is provided that it shall not be lawful to alter or modify the course, location, condition or capacity of the channel of any navigable water of the United States unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to beginning the same:

And whereas, the Sanitary District of Chicago, a municipal corporation, organized under the laws of the State of Illinois, has constructed an artificial channel from Robey street, Chicago, to Lockport, and has been heretofore granted permission by the Secretary of War to make certain improvements in the Chicago river for the purpose of correcting and regulating the cross section of the river so as to secure a flowage capacity of 300,000 cubic feet per minute with a velocity of one and one-quarter miles an hour, it being intended to connect the said artificial channel with the west fork of the south branch of Chicago river at Robey street in the said City of Chicago.

And whereas, The said Sanitary District of Chicago has now applied to the Secretary of War for permission to divert the waters of the said Chicago river and cause them to flow into the said artificial channel at Robey street as aforesaid;

And whereas, The said Sanitary District of Chicago represents that such movable dams and sluice gates as are necessary to, at all times, secure absolute and complete control of the volume and velocity of flow through the Chicago river have been constructed;

Now therefore, The Chief of Engineers having consented thereto, this is to certify that the Secretary of War hereby gives permission to the said Sanitary District of Chicago to open the channel constructed and cause the water of Chicago river to flow into the same, subject to the following conditions:

1. That it be distinctly understood that it is the intention of the Secretary of War to submit the questions connected with the work of the Sanitary District of Chicago to Congress for consideration and [foi. 93] final action, and that this permit shall be subject to such action as may be taken by Congress.

2. That if, at any time, it become apparent that the current created by such drainage works in the south and main branches of Chicago river, be unreasonably obstructive to navigation or injurious to property, the Secretary of War reserves the right to close said discharge through said channel or to modify it to such extent as may be demanded by navigation and property interests along said Chicago river and its South Branch.

3. That the Sanitary District of Chicago must assume all responsibility for damages to property and navigation interests by reason of the introduction of a current in Chicago river.

Witness my hand this 8th day of May, 1899.

R. A. Alger, Secretary of War. (Seal War Office.) John
M. Wilson, Brig. Genl. Chf. of Engrs. U. S. A."

EXHIBIT "B" TO BILL OF COMPLAINT

"Whereas, under date of May 8th, 1899, the Secretary of War granted permission unto The Sanitary District of Chicago to open the artificial channel from Roby Street, Chicago, to Lockport, and

cause the waters of Chicago river to flow into the same, upon the following condition, inter alia:

'2. That if, at any time, it becomes apparent that the current created by such drainage works in the south and Main branches of Chicago River be unreasonably obstructive to navigation or injurious to property, the Secretary of War reserves the right to close said discharge through said channel or to modify it to such extent as may be demanded by navigation and property interests along said Chicago River and its south Branch.'

And whereas, It is alleged by various commercial and navigation interests that the present discharge from the river into the Drainage Canal sometimes exceeds three hundred thousand (300,000) cubic feet per minute, causing a velocity of nearly three (3) miles per hour, which greatly endangers navigation, in the present condition of the river.

Now, therefore, This is to certify that the Secretary of War, upon the recommendation of the Chief of Engineers, hereby directs said [fol. 94] Sanitary District to regulate the discharge from the river into the Drainage Canal so that the maximum flow through the Chicago river and its south branch shall not exceed two hundred thousand (200,000) cubic feet per minute.

Witness my hand this ninth day of April, 1901.

Elihu Root, Secretary of War."

"EXHIBIT" "C" TO BILL OF COMPLAINT

"War Department, Washington

File No. 2560 of 1900.

July 23, 1901.

SIR: Referring to War Department order of April 9th last, restricting the flow of water through the Chicago River under War Department permit of May 8, 1899 to 200,000 cubic feet per minute, and replying to your letter of the 15th instant, in which you request, for reasons stated, that the said order be amended to permit a flow of 300,000 cubic feet per minute between the hours of 4 P. M. and twelve o'clock midnight, I beg to inform you that I have this day approved the modification last referred to, which approval will be subject to revocation by the Department in case the increase shall prove to be dangerous to navigation.

Very respectfully, Elihu Root, Secretary of War. Mr. Alexander J. Jones, President Sanitary District of Chicago, Chicago, Illinois."

EXHIBIT "D" TO BILL OF COMPLAINT

"J. A. G. O. (6353)

Whereas, Under date of May 8th, 1899, the Secretary of War granted permission unto the Sanitary District of Chicago to open the artificial channel from Robey Street, Chicago, to Lockport, and cause the waters of Chicago River to flow into the same, upon the following condition, inter alia;

[fol. 95] "2. That if, at any time, it becomes apparent that the current created by such drainage works in the South and Main Branches of Chicago River, be unreasonably obstructive to navigation or injurious to property, the Secretary of War reserves the right to close said discharge through said channel or to modify it to such extent as may be demanded by navigation and property interests along said Chicago River and its South Branch;"

And whereas, The Secretary of War subsequently directed said Sanitary District of Chicago, to regulate the discharge of water into the Chicago Drainage Canal so that the maximum flow through the Chicago River shall not exceed 200,000 cubic feet per minute from midnight to 4 p. m., nor 300,000 cubic feet per minute from 4 p. m. to midnight;

And whereas, Said Sanitary District of Chicago has applied to the Secretary of War for permission to increase the flow between midnight and 4 p. m. daily, to 250,000 cubic feet per minute; and the Chief of Engineers has recommended that the increase applied for be granted, but that the rate of flow from 4 p. m. to midnight be reduced to 250,000 cubic feet per minute, so that flow through the Chicago River shall not exceed 250,000 cubic feet per minute throughout the 24 hours of the day.

Now, therefore, This is to certify that, in accordance with the recommendation of the Chief of Engineers, the Secretary of War hereby gives unto the said Sanitary District of Chicago permission to regulate said discharge so that the maximum flow through the Chicago River shall not exceed 250,000 cubic feet per minute throughout the 24 hours of the day, upon the following conditions:

1. That this permission shall be in lieu of the present authorized rates of flow as stated above.

2. That the permission herein given shall be subject to such modification as in the opinion of the Secretary of War the public interests may from time to time require.

3. That said Sanitary District of Chicago shall be responsible for all damages inflicted upon navigation interests by reason of the increase in flow herein authorized.

Witness my hand this 5th day of December, 1901.

W. Cary Sanger, Assistant Secretary of War."

[fol. 96]

EXHIBIT "E" TO BILL OF COMPLAINT

"J. A. G. O. (6353)

Whereas, under date of December 5, 1901, by an instrument supplementary to the original permission granted by the Secretary of War, May 8, 1899, to the Sanitary District of Chicago to open the artificial channel from Robey Street, Chicago, to Lockport, and cause the waters of the Chicago River to flow into the same, the Secretary of War, pursuant to authority reserved in said permission of May 8, 1899, gave permission to the Sanitary District of Chicago to regulate said discharge so that the maximum flow per minute throughout the twenty-four hours of the day, upon the following conditions, inter alia:

"That the permission herein given shall be subject to such modification as in the opinion of the Secretary of War the public interests may from time to time require";

And whereas, The said Sanitary District of Chicago has applied for permission to increase the flow through the Chicago River from 250,000 cubic feet per minute to 350,000 cubic feet per minute during the closed season of navigation, in order to carry off the accumulations of sewage deposit which line the shores along the city;

Now, therefore, This is to certify that, in accordance with the recommendation of the Chief of Engineers, the Secretary of War hereby gives unto said Sanitary District of Chicago permission to increase the flow through the Chicago River from 250,000 cubic feet per minute to 350,000 cubic feet per minute, until the 31st day of March, 1903, after which date it shall be reduced to 250,000 cubic feet per minute, as now authorized, upon the following conditions:

1. That the permission herein given shall be subject to such modification as in the opinion of the Secretary of War the public interests may from time to time require.

2. That said Sanitary District of Chicago shall be responsible for all damages inflicted upon navigation interests by reason of the increase in flow herein authorized.

Witness my hand this seventeenth day of January, 1903.

W. Cary Sanger, Assistant Secretary of War."

[fol. 97]

EXHIBIT "F" TO BILL OF COMPLAINT

"The Sanitary District of Chicago

Chicago, February 5th, 1912.

SIR: On behalf of the Board of Trustees of The Sanitary District of Chicago, I have the honor to apply for enlargement of the terms

of an instrument executed by The Secretary of War May 8, 1899, as modified by instruments similarly executed on December 5, 1901, and June 30, 1910, respectively, in the following particulars and in view of the facts hereinafter set forth, to wit:

The flow of water from Lake Michigan through the canal of The Sanitary District of Chicago is now limited by the said instruments to 4167 cubic feet per second.

The population of the Sanitary District, the sewage of which is to be disposed of through the channels constructed and to be constructed by the said District, exceeds 2,500,000 persons, and is rapidly increasing. The only method at present available for disposing of the sewage of this population is by diluting the same with water withdrawn from Lake Michigan and flowing through the Chicago Drainage Canal. The least amount of water necessary to render sewage innocuous by the dilution method has been estimated by well recognized sanitary experts as 1,000 feet per second for every 300,000 inhabitants; so that the amount permitted to be withdrawn by the instruments to which reference has been made is much below the amount at present needed by the District.

The Sanitary District has been for some time engaged in investigating methods and devising plans for the treatment of the sewage with a view to requiring less water for its safe dilution in the future. The methods of other states and countries for such treatment of sewage, are not as yet entirely satisfactory to all concerned, and any changes of methods for large cities must necessarily require several years.

Until these experiments are concluded and proper works installed, the use of additional water from Lake Michigan is essential to the health of the large population of the City of Chicago and of the Sanitary District and of those who live adjacent to the Des Plaines and Illinois rivers into which such waters are discharged.

Subject therefore to such restrictions as to you may seem proper [fol. 98] for the protection of the public interest, and to such a method of supervision as you may suggest to promote the general welfare, and pending the completion of the investigations now being conducted to render the use of increasing quantities of water in the future necessary; I have the honor to apply for permission for The Sanitary District of Chicago to withdraw from Lake Michigan through the Chicago river and Calumet river—not to exceed ten thousand cubic feet of water per second; such permission to be revocable at any time by The Secretary of War, and subject to such action as the Congress of the United States may see fit to take in the premises.

Respectfully submitted, George M. Wisner, Chief Engineer.
Hon. Henry L. Stimson, Secretary of War, Washington,
D. C."

EXHIBIT "G" TO BILL OF COMPLAINT

In the Matter of the Application of THE TRUSTEES OF THE SANITARY DISTRICT OF CHICAGO for Permission to Divert from Lake Michigan 10,000 Cubic Feet of Water Per Second.

War Department

Washington, January 8, 1913.

The Sanitary District of Chicago applies to the War Department for permission to increase the amount of water it is authorized to withdraw from Lake Michigan from 4,167 cubic feet per second, the amount now authorized, to 10,000 cubic feet per second.

The Chicago Drainage Canal was opened in January, 1900. It reverses the flow of the Chicago River, which formerly emptied into Lake Michigan, and as a result a portion of the waters of that lake, instead of following their former course through Lakes Huron, Erie, and Ontario into the St. Lawrence, are now carried across the watershed into the Illinois River, and through that to the Mississippi and the Gulf of Mexico. The canal thus serves as a system of drainage for the City of Chicago, carrying the sewage of that city southward to the Mississippi, and thus protects the water supply of that city, which is taken from Lake Michigan.

[fol. 99] Permission to divert water from Lake Michigan was first granted by my predecessor, Secretary Alger, on May 8, 1899. He permitted a flowage of 5,000 cubic feet per second, but his permit contained the following conditions:

1. That it be distinctly understood that it is the intention of the Secretary of War to submit the questions connected with the work of the Sanitary District of Chicago to Congress for consideration and final action, and that this permit shall be subject to such action as may be taken by Congress.

2. That if, at any time, it becomes apparent that the current created by such drainage works in the south and main branches of Chicago River be unreasonably obstructive to navigation or injurious to property, the Secretary of War reserves the right to close said discharge through said channel or to modify it to such extent as may be demanded by navigation and property interests along said Chicago River and its south branch.

Subsequently, during the administration of Secretary Root, the amount of the current permitted to be taken was modified or restricted until December 5, 1901, when it was fixed at the amount now permitted, and these permits contained the condition—

that the permission herein given shall be subject to such modifications as in the opinion of the Secretary of War the public interests may from time to time require.

On March 14, 1907, an application made for permission to divert an additional 4,000 cubic feet per second for the purpose of reversing the current of the Calumet River and flowing that river also through the canal to drain the southern portion of Chicago was denied by Secretary Taft in an opinion in which he referred once more to the desirability of submitting "this question of capital and national importance to the Congress of the United States."

It is clear that even under the conditions heretofore manifested on these applications, the proposition to divert the waters of Lake Michigan into another watershed has not been entertained without hesitation and careful restriction by my predecessors. The propriety of obtaining congressional sanction for the project has been pointed out from the beginning; and the form in which the permit has been granted, even for the moderate amount of diversion permitted, has been so phrased as to indicate that the permission was predicated upon the absence of any substantial injury to commerce.

The sanitary canal has never received the direct sanction of Congress. It was built solely under the authority of the State of Illinois, as given in its 1889 general act for creating sanitary districts. And although pursuant to the suggestion of my predecessors the question of the propriety of its diversion of water from Lake Michigan was presented urgently in the reports of the Chief of Engineers for the [fol. 100] years 1899 and 1900 as transmitted to Congress, no action upon the question has ever been taken by that body. In the argument before me it was urged that the present canal represented the growth and development of a national policy expressed in two acts of Congress, 1822 and 1827, which authorized the construction of a canal "to connect the Illinois River with Lake Michigan," thus connecting the two watersheds. (Acts of Mar. 30, 1822, and Mar. 2, 1827.) But these statutes authorized a canal for the purpose of navigation, and not sanitation. (*Missouri v. Illinois*, 200 U. S. 526.) The Illinois and Michigan Canal, actually constructed under their authority, derived its water for navigation purposes from the Calumet, Des Plaines, and Chicago Rivers, and not from the Lakes. And although in the latter part of its existence it was used to a very slight extent to help purify the waters of the Chicago River and thus sanitize the City of Chicago, such a purpose could not have been dreamed of at the time its construction was authorized by Congress, 90 years ago. I can not see that its authorization and construction offer the slightest congressional sanction for the great canal now under discussion, which was not even contemplated until much more than half a century later. Even at the time when the present canal was constructed and opened it is very evident that its ultimate possible effect upon the navigation of the Great Lakes was not clearly realized by those interested in that navigation. The evidence before me indicates that the withdrawal of water from Lake Michigan at Chicago would require about five years to produce its full effect upon the levels of the Great Lakes (see report of International Waterways Commission on Chicago Drainage Canal, p. 7) and that this effect would be still further obscured by periodic oscillations in the lake levels. These facts may easily explain any inaction on the

part of the Nation and their representatives to this withdrawal of water and make it clear that any argument of implied acquiescence must be scrutinized with unusual care.

In this respect the situation is now very different. The present application was opposed by representatives of 23 cities and 6 States interested in harbors and commerce upon the Great Lakes, notably the Cities of Duluth, Milwaukee, Toledo, Cleveland and Buffalo. It was opposed by representatives of the navigation interests engaged on the Chicago River as well as on the Great Lakes, and by the official representatives of the Canadian Government as well as private Canadian interests engaged in the navigation of the Lakes and the [fol. 101] St. Lawrence River, including representatives of the Cities of Kingston and Montreal.

A very careful consideration of the voluminous evidence and statements submitted, as well as a consideration of the reports of other commissions and boards of engineers who have investigated the subject, leaves no doubt in my mind that the withdrawal of 10,000 cubic feet per second would substantially interfere with the navigable capacity of the Great Lakes and their connecting rivers. The Chief of Engineers, whose statutory authority in passing upon this application is concurrent with and independent of my own, and whose opinion upon such a question of scientific conclusion must be given especial weight, so states in his recommendation. His conclusions are corroborated by the authority of other boards of investigation, notably the report of the International Waterways Commission of January 4, 1907.

Careful observations and calculations conducted under the offices of the United States Lake Survey and reported through the Chief of Engineers, covering observations for the last 46 years, indicate that a withdrawal of 10,000 cubic feet per second would reduce levels at various places as follows:

	Inches
Lakes Huron and Michigan	6.9
Lake St. Clair	6.3
Lake Erie	5.4
Lake Ontario	4.5
St. Lawrence River at Rapide Piat	4.8 plus.

The foregoing effects would be produced at mean lake levels; the lowering effects would be much greater at low-water periods—the precise time when any additional shortage would be most keenly felt. This reduction would create substantial injury in all of the American harbors of the Great Lakes and in the St. Marys' St. Clair, and Detroit Rivers. It would produce equal injury in Canadian harbors on the Great Lakes, and a still greater injury on the lower St. Lawrence, the Canadian officials claiming a probable lowering effect of 12 inches at Montreal at low water.

The United States has improved about 106 harbors and rivers on the Great Lakes affected by this diversion and has spent on such improvements over ninety millions of dollars. The Canadian Government has improved over 50 harbors on Georgian Bay and Lakes

Huron, St. Clair, Erie and Ontario. By treaty, American vessels are accorded equal rights of navigation with Canadian vessels in all [fol. 102] these waters, including the St. Lawrence River. The reduction of the water in these harbors and channels would diminish to just that extent the amount of these improvements, and would nullify to just that extent the effects of the moneys which have been appropriated for that purpose by the respective Governments. Connecting various portions of these waterways are the two canals at the Sault Ste. Marie, the Welland Canal, and a number of canals on the St. Lawrence River. The available depth of water over one or all sills of each of these canals would be affected, and in some cases reconstruction might even be made necessary.

The enormous lake traffic which uses these harbors and these rivers is increasing with great rapidity, both in gross volume and in the size and average draft of the vessels employed therein. The Chief of Engineers reports that to lower the water surface 6 inches would reduce the permissible load of one of the large modern vessels by from 300 to 550 tons, with a consequent loss of from \$3,600 to \$7,500 in freights for such vessel per season. The International Waterways Commission reported that it would be a conservative estimate which would make the loss to the navigation interests resulting from a reduction of 6 inches in the depth of water as \$1,500,000 per annum, or a sum which, capitalized at 4 per cent., would amount to a loss of \$37,500,000. (see third progress report of International Waterways Commission of Dec. 1, 1907, p. 24). The lowest careful estimate of injury to American vessels alone is reported by the Chief of Engineers at \$1,000,000 per year.

The argument was made before me that, owing to the well-known fact that the levels of the lake vary, owing to winds and change of barometric pressure, by amounts even greater than the reduction which would be caused by this canal, therefore the proposed reduction is of no consequence. This argument is well disposed of in the report of the International Waterways Commission of January 4, 1907, on page 8, as follows:

It is evident that the average level of the lake may be lowered considerably without the change becoming immediately apparent, and that fact has been used as an argument to prove that the lowering caused by the Chicago Drainage Canal is of no consequence to those interested in navigation. Since they cannot see it they will not know it and will not feel it. The argument is fallacious. It is true that they cannot see it immediately, but they will soon feel it and will know it through the most costly means of acquiring knowledge—the injury to their material interests. The oscillations will remain the same as before, but low water will fall lower and high water will rise less high. The average draft of vessels must be [fol. 103] diminished by the amount that the average level is lowered unless the depth be restored by remedial works.

In a word, every drop of water taken out of Chicago necessarily tends to nullify costly improvements made under direct authority of Congress throughout the Great Lakes, and a withdrawal of the amount now applied for would nullify such expenditures to the

amount of many millions of dollars, as well as inflict an even greater loss upon the navigation interests using such waters.

On the other hand, the demand for the diversion of this water at Chicago is based solely upon the needs of that city for sanitation. There is involved in this case no issue of conflicting claims of navigation. The Chief of Engineers reports that so far as the interests of navigation alone are concerned, even if we should eventually construct a deep waterway from the Great Lakes to the Mississippi over the route of the sanitary canal, the maximum amount of water to be diverted from Lake Michigan need actually be not over 1,000 feet per second, or less than a quarter of the amount already being used for sanitary purposes in the canal. This estimate is confirmed by the report of the special board of engineers on the deep waterway from Lockport, Ill., to the mouth of the Illinois River, dated January 23, 1911. It is also confirmed by the practical experience of the great Manchester Ship Canal in England. From the standpoint of navigation alone in such a waterway too great a diversion of water would be a distinct injury rather than a benefit. It would increase the velocity of the current and increase the danger of overflow and damage to adjacent lands.

We have, therefore, presented in this case claims of entirely different characters and jurisdictions—the claim of sanitation on the one side and of navigation on the other; the vital interest of a single community on the one side and the broad interest of the commerce of the nation on the other. The discretion given to the Secretary of War under sections 9 and 10 of the act of 1899 is very broad, but I have very grave doubts as to whether it was intended to authorize him to grant a permit which would inflict a substantial injury upon commerce in order to benefit sanitation. The entire purpose and scope of that legislation was to make him the guardian of commercial interests of the nation represented in their waterways. And while he sometimes under that statute must decide that the interests of one class of transportation are less important and must yield to the conflicting interests of another class, I have considerable doubt [fol. 104] whether it was intended to give him authority to sacrifice substantial interests of navigation to entirely different claims over which he normally has no jurisdiction whatever.

But however that may be, and without resting my decision upon the question of my legal authority, I am quite clear as a matter of discretion that under the facts presented by this case no further diversion of water should be permitted at Chicago without the direct sanction of the Congress of the United States. I do not for one moment minimize the importance of preserving the health of the great City of Chicago; but when a method of doing this is proposed which will materially injure a most important class of the commerce of the nation and which will also seriously affect the interests of a foreign power, it should not be done without the deliberate consideration and authority of the representatives of the entire nation. The growth of Chicago is phenomenal and its representatives are quite unwilling to put any final limit to the demand which may be made upon the waters of Lake Michigan for its sanitation under the

system now in use. I have before me the report of 1911 of the president of the sanitary district in which he says:

I am of the opinion that the presumption that our water supply is to be limited to 10,000 cubic feet per second, or 600,000 cubic feet per minute, is gratuitous and mischievous and should not be voiced by the officials of this district. I believe that we should have the volume requisite to our needs as they appear and are justified.

It is therefore quite conceivable that compliance with their sanitary needs according to this method of sanitation may eventually materially change this great natural watercourse now existing through the Lakes. The weighing of the sanitation and possibly the health of one locality over against the commerce of the rest of the Nation and the consideration of our relations and obligations to Canada in respect to a great international waterway are not matters of mere technical or scientific deduction. They are broad questions of national policy. They are quite different in character, for example, from the question of fixing the proper location of a pierhead line or the height or width of a drawbridge over a navigable stream—fair samples of the class of questions which come to the Secretary of War for decision under the above-mentioned act of 1899. While the researches and opinions of experts in the respective fields are necessary and useful as an assistance toward reaching a fair and proper policy, the final determination of that policy should belong not to an [fol. 105] administrative officer but rather to those bodies to whom we are accustomed to entrust the making of our laws and treaties.

In my view of the proper exercise of my discretion in this matter the foregoing considerations are sufficient for a decision of this case. Having reached the conclusion that the proposed diversion of the waters of Lake Michigan would substantially injure the interests of navigation on the Great Lakes which it is my legal duty to protect, it would clearly follow that the present application should be denied.

I have carefully examined, however, the evidence which both sides have introduced bearing upon the sanitary needs of the City of Chicago, and my conclusion is in no way shaken. I am not persuaded that the amount of water applied for is necessary to a proper sanitation of the City of Chicago. The evidence indicates that at bottom the issue comes down to the question of cost. Other adequate systems of sewage disposal are possible and are in use throughout the world. The problem that confronts Chicago is not different in kind but simply larger and more pressing than that which confronts all of the other cities on the Great Lakes, in which nearly 3,000,000 people of this country are living. The urban population of those cities, like that of Chicago, is rapidly increasing, and a method of disposition of their sewage which will not injure the potable character of the water of the Lakes must sooner or later be found for them all. The evidence before me satisfies me that it would be possible in one of several ways to at least so purify the sewage of Chicago as to require very much less water for its dilution than is now required by it in its unpurified condition. A recent report of the engineer of the sanitary commissioner (Oct. 12, 1911) proposes

eventually to use some such method, but proposes to postpone its installation for a number of years to come, relying upon the present more wasteful method in the meanwhile. It is manifest that so long as the city is permitted to increase the amount of water which it may take from the Lakes, there will be a very strong temptation placed upon it to postpone a more scientific and possibly more expensive method of disposing of its sewage. This is particularly true in view of the fact that by so doing it may still further diminish its expenses by utilizing the water diverted from the Lakes for water power at Lockport. But it must be remembered that for every unit of horsepower realized by this water at Lockport four units of similar horsepower would be produced at Niagara, where the natural conditions are so much more favorable. Without, therefore, going more into detail in a discussion of this question, I feel clear that no such case of necessity has been presented by the evidence before me as would justify the proposed injury to the many varied interests in the great waterways of our lakes and their appurtenant rivers.

It remains only to consider certain special arguments that have been pressed upon me. It has been urged that the levels of the lakes, even if lowered, could be restored by compensating works. To a certain extent that is true. But the very nature of this consideration offers another illustration of the importance of having the whole question passed upon by Congress. Such compensating works can only be constructed by the authority of Congress and at very considerable cost. It is not a matter which is in the hands of the Secretary of War. Permission to divert water which will at one and the same time nullify the effect of past appropriations and make necessary similar expenditures in the future, should be granted only with the express consent of the body in whose hands the making of such appropriations and the authorization of such works rest.

Furthermore, in most cases such compensating works could only be constructed with the joint consent of our neighbor Canada. The United States Government alone would be unable, even if it were willing to spend its own funds, to compensate for the damage done through the lowering of these levels unless Canada were willing to join in constructing the portion of such works which would necessarily stand upon Canadian soil.

The question therefore becomes not merely national but international, and this leads me to the consideration of the arguments which were urged by both sides in reference to the treaty with Great Britain in respect to Canada of January 11, 1909. A careful consideration of that treaty fails to indicate to me that it is in any way controlling upon the questions now before me. It gives to the citizens of both countries certain mutual rights of navigation in the waters of the Great Lakes and their connecting rivers; but beyond that the question of the right to this diversion at Chicago seems to me to have carefully excluded. The applicants for the permit have urged upon me that article 8 of the treaty gives a preference to the uses of water of the lakes for domestic and sanitary purposes over the uses of such water for navigation. Article 8, however, applies only to future

[fol. 107] cases brought before the International Joint Commission; and furthermore I am clearly of the opinion that the domestic and sanitary purposes referred to in that article were intended to be the "ordinary" uses of such waters for domestic and sanitary purposes referred to in article 3. It would be quite contrary to our own national policy to give such a preference to an extraordinary sanitary use of such a character as to create a substantial injury to navigation. The matter has been before our own Supreme Court in the case of the *United States v. the Rio Grande Dam & Irrigation Co.* (174 U. S., 690). In that case the Supreme Court held that a company which proposed to take the water of the Rio Grande river for the purpose, among others, "of supplying water to cities and towns for domestic and municipal purposes" could be prevented from so doing when the result would be a substantial injury to the navigability of the Rio Grande river farther down. In its opinion the court said:

The question always is one of fact, whether such appropriation substantially interferes with the navigable capacity within the limits where navigation is a recognized fact. In the course of the argument, this suggestion was made, and it seems to us not unworthy of note, as illustrating this thought. The Hudson river runs within the limits of the State of New York. It is a navigable stream and a part of the navigable waters of the United States, so far at least as from Albany southward. One of the streams which flows into it and contributes to the volume of its waters is the Croton river, a non-navigable stream. Its waters are taken by the State of New York for domestic uses in the City of New York. Unquestionably the State of New York has a right to appropriate its waters, and the United States may not question such appropriation, unless thereby the navigability of the Hudson be disturbed. On the other hand, if the State of New York should, even at a place above the limits of navigability, by appropriation for any domestic purposes, diminish the volume of waters, which, flowing into the Hudson, make it a navigable stream, to such an extent as to destroy its navigability, undoubtedly the jurisdiction of the National Government would arise and its power to restrain such appropriation be unquestioned; and within the purview of this section (act of Sept. 19, 1890, ch. 907) it would become the right of the Attorney General to institute proceedings to restrain such appropriation.

The treaty, however, contains provisions in its article 10 by which "any questions or matters of difference arising between the high contracting parties involving the rights, obligations, or interests of the United States or of the Dominion of Canada, either in relation to each other or to their respective inhabitants, may be referred for decision" to an international joint commission established by the said treaty. The hearing before me brought forth the fact that the Government of Canada regards the proposal contained in this application as one which affects the material interests of that country. The establishment by formal treaty between the two countries of a tribunal [fol. 108 & 109] with jurisdiction to decide just such questions seems to me to afford an additional reason against the assumption of juris-

diction to decide the question by an administrative officer of one of those countries.

In short, after a careful consideration of all the facts presented, I have reached the following conclusions:

First. That the diversion of 10,000 cubic feet per second from Lake Michigan, as applied for in this petition, would substantially interfere with the navigable capacity of the navigable waters in the Great Lakes and their connecting rivers.

Second. That that being so, it would not be appropriate for me, without express congressional sanction, to permit such a diversion, however clearly demanded by the local interests of the sanitation of Chicago.

Third. That on the facts here presented no such case of local permanent necessity is made evident.

Fourth. That the provisions of the Canadian treaty for a settlement by joint commission of "questions or matters of difference" between the United States and Canada offer a further reason why no administrative officer should authorize a further diversion of water, manifestly so injurious to Canada, against Canadian protest.

The prayer of the petition is therefore denied.

Henry L. Stimson, Secretary of War.

[File endorsement omitted.]

[fol. 110] DISTRICT COURT OF THE UNITED STATES, NORTHERN
DISTRICT OF ILLINOIS

UNITED STATES OF AMERICA, Complainant,

vs.

THE SANITARY DISTRICT OF CHICAGO, Defendant.

THE ANSWER OF THE SANITARY DISTRICT OF CHICAGO, DEFENDANT,
TO THE BILL OF COMPLAINT OF THE UNITED STATES OF AMERICA,
COMPLAINANT—Filed January 16, 1914

[fol. 111] This defendant, The Sanitary District of Chicago, by Edmund D. Adcock and Alfred S. Austrain, its solicitors, now, and at all times hereinafter saving and reserving unto itself all benefit and advantage of exception which can or may be had or taken to the many errors, uncertainties and other imperfections in said bill contained for answer thereunto, or to so much or such parts thereof as this defendant is advised, it is or are material or necessary for it to make answer unto answering says:

1. This defendant admits that it is a municipal corporation, organized and existing under and by virtue of the laws of the State

of Illinois, as charged in the first paragraph of the Bill of Complaint, filed herein, and this defendant hereto attaches a copy of the Act of the General Assembly of the State of Illinois, entitled "An Act to create Sanitary Districts and to remove obstructions in the Desplaines and Illinois Rivers," approved May 29, 1889, in force July 1, 1889, [fol. 112] and all acts amendatory and supplementary thereto, marked "Exhibit A" and made a part hereof, to which reference is hereby made.

2. This defendant admits that the Chicago River is situated in the County of Cook and State of Illinois and consists of a main river, originally flowing in a generally easterly direction, emptying into Lake Michigan; that said main river is formed by two branches, known as the North Branch and the South Branch respectively; that said South Branch is divided into two forks, known as the West Fork and the South Fork, and this defendant attaches hereto a map or plat, marked "Exhibit B" and made a part hereof, which said plat more particularly describes said river, its branches and forks and shows the exact location and direction of the same, to which said "Exhibit B" reference is hereby made.

3. This defendant admits that the said Chicago River including both the North Branch and South Branch as well as the West Fork and South Fork of the South Branch are navigable waters of the United States. .

4. This defendant admits that the United States of America has appropriated and expended large sums of money to-wit: the sum of \$4,216,066.33 in improving the navigable capacity of said river and the harbor at the mouth of the same, as is charged in paragraph 4 of the Bill of Complaint, filed herein, and this defendant shows that of the said sum, the said complainant expended, to wit: the sum of \$2,389,527.10, in and about the improvement of the harbor at the mouth of the said Chicago River; that no part of said latter sum was expended in or about the improvement of said Chicago River; that down to the year 1896 the said complainant had expended no money whatever in the improvement of the said Chicago River; that the balance of said sum of \$4,216,066.36, to wit: the sum of \$1,826,539.20 was expended by the complainant in and about the improvement of the Chicago River between the year 1896 and the [fol. 113] 30th day of June, 1913; that the City of Chicago, prior to the expenditure by the United States of any money on the Chicago River, began the improvement of said river and expended large sums of money in said improvement; that the City of Chicago entered upon the improvement of the said Chicago River in the year 1861 and has expended during the period beginning in the said year, 1861, and ending the first day of January, 1913, the sum of, to wit: \$6,272,574.52; that this defendant has itself expended in addition to the money expended by the City of Chicago, the sum of, to wit: \$10,640,729.52, in and about the improvement of the said Chicago River, the South Branch and West Fork thereof; that the said moneys so expended by this defendant was expended for the

purpose of enabling this defendant to cause to flow the several amounts of water through the said river as provided under the Act of the General Assembly of Illinois of 1889 and all of said expenditures improved the capacity and navigability of said Chicago River and its several branches.

5. This defendant admits that the provisions of Section 10 of an Act of Congress, approved March 3, 1889, entitled "An Act making appropriations for the construction, repair and preservation of certain public works on rivers, harbors and for other purposes" are substantially as set forth in paragraph 5 of the Bill of Complaint filed herein; that the said Act of Congress has remained in full force and effect ever since its passage and still remains in full force and effect.

6. This defendant admits that the Secretary of War on, to wit, the 8th day of May, 1899, issued a permit to this defendant granting it permission to open the channel constructed and cause the waters of the Chicago River to flow into the same, that the said permit is substantially in words and figures as set forth in the said Bill of Complaint as "Exhibit A" thereto. This defendant denies that application was made by this defendant for permission to abstract and divert a certain quantity of water from Lake Michigan through the said main channel of this defendant, but this defendant shows that application was made to the Secretary of War for permission to open the channel constructed and cause the waters of the Chicago River to flow into the same pursuant to and under the said Act of May 29th, 1889, hereinbefore set forth, that in the said permit the said Secretary of War stated that he reserved the right to close said discharge through said channel or to modify it to such extent as may be demanded by navigation and property interests along said Chicago River and its South Branch.

7. This defendant admits that on, to wit: April 9, 1901, the Secretary of War ordered and directed this defendant to reduce the flow through the Chicago River to 200,000 cubic feet of water per minute as charged in paragraph 7 of said bill; that the provisions of said order are substantially as set forth in the said Bill of Complaint as "Exhibit B" thereto.

8. This defendant admits that on or about July 23, 1901, the Secretary of War modified the order theretofore issued on April 9, 1901, as aforesaid by issuing a permit to defendant to flow 300,000 cubic feet of water per minute through the Chicago River between the hours of 4:00 P. M. and 12:00 P. M. midnight; that the provisions of the said permit are set forth in the Bill of Complaint as "Exhibit C."

9. This defendant admits that on or about the 5th day of December, 1901, the Secretary of War issued a permit to defendant to cause the flow 250,000 cubic feet of water per minute throughout the twenty-four hours of the day; that the provisions of said permit are substantially as is set forth in said Bill of Complaint as "Exhibit D" thereto.

10. This defendant admits that on or about the 17th day of January, 1903, the Secretary of War issued a permit to the defendant to increase the flow of water through the Chicago River from 250,-[fol. 115] 000 to 300,000 cubic feet of water per minute until the 31st day of March, 1903, after which time the flow to be reduced to 250,000 cubic feet of water per minute; that the provisions of the said permit are substantially as is set forth in the said Bill of Complaint as "Exhibit E" thereto.

11. This defendant admits that on or about the 28th day of November, 1906, this defendant made application to the Secretary of War for permission to construct a canal connecting the Calumet River with the main channel of the defendant at what is known as Sag Station, as charged in paragraph 11 of said Bill of Complaint; that thereafter on or about the 14th day of March, 1907, the said Secretary of War denied the said application and refused to grant the permit applied for thereunder; that a copy of the said statement of the Secretary of War denying said permit is by express reference thereto, made part hereof, and marked "Exhibit C," and attached hereto.

12. This defendant admits that on or about the 11th day of September, 1907, this defendant applied for and obtained from the Secretary of War a permit to construct a canal connecting Lake Michigan at Wilmette, Illinois, with the North Branch of the Chicago River; that a copy of the said permit is by express reference thereto, made a part hereof and is attached hereto and marked "Exhibit D."

13. This defendant admits that on or about the 30th day of June, 1910, this defendant applied for and obtained permission from the Secretary of War authorizing it to construct a canal connecting the Calumet River with the main channel of this defendant at Sag, Illinois, and to reverse the flow of the Calumet River, that the said canal is known and described as the Sag Channel, that a copy of the said permit issued on said, to-wit: June 30, 1910, is by express reference thereto, made a part hereof and is attached hereto and marked "Exhibit E."

[fol. 116] 14. This defendant admits that on or about the 5th day of February, 1912, this defendant applied to the Secretary of War for a permit to withdraw and divert from Lake Michigan through the Chicago and Calumet Rivers at least the amount of 10,000 cubic feet of water per second or 600,000 cubic feet of water per minute as charged in paragraph 14 of said Bill of Complaint; copy of which said application is attached to said Bill of Complaint and marked "Exhibit F."

15. This defendant admits that on, to-wit: the 8th day of January, 1913, the Secretary of War refused said application of February 5, 1912; that the statement of the Secretary of War in refusing the said application is set forth as "Exhibit G" to said Bill of Complaint.

16. This defendant denies that it has for a long period of time diverted and abstracted from Lake Michigan and caused to flow through the Chicago River, or that it is at the present time diverting and abstracting from Lake Michigan and causing to flow through the Chicago River from 400,000 to 600,000 cubic feet of water per minute as charged in paragraph 16 of said Bill of Complaint.

17. This defendant denies that the diversion and abstraction of the waters of Lake Michigan into the Chicago River substantially in excess of the amount of 250,000 cubic feet of water per minute has lowered or will lower the levels of Lake Michigan, Lake Huron, Lake St. Clair, Lake Erie, Lake Ontario, Sault Ste Marie, St. Mary's River, St. Clair River, Detroit River, Niagara River and St. Lawrence River, or any of them, or of any of the harbors, channels, canals or rivers connected therewith or will injure or diminish or create an obstruction to the navigable capacity of said waters or any of them as charged in paragraph 18 of said Bill of Complaint.

18. This defendant neither affirms nor denies that the said waters mentioned in paragraph 18 of the said Bill of Complaint have been deepened and improved under great expense to the complainant, [fol. 117] under the authority of Congress but prays for strict proof thereof; and this defendant denies that the diversion and abstraction of waters from Lake Michigan substantially in excess of the permits hereinabove set forth have, or will have a tendency to undo or annul the orders or acts of Congress as charged in paragraph 19 of said Bill of Complaint.

19. This defendant denies that the said diversion and abstraction of the waters of Lake Michigan through the Chicago River in excess of or substantially in excess of the amount provided by the permit of the Secretary of War as aforesaid will modify the condition and capacity of the channel of the said Chicago River as charged in paragraph 20 of said Bill of Complaint.

20. This defendant denies that the said diversion and abstraction of waters of Lake Michigan through the Chicago River in excess of or substantially in excess of the permits of the Secretary of War as aforesaid, will alter or modify the condition and capacity of Lake Michigan, Lake Huron, Lake St. Clair, Lake Erie, Lake Ontario, Sault Ste Marie, St. Mary's River, St. Clair River, Detroit River, Niagara River and St. Lawrence River, or any of them, and the ports, roadsteads, havens, harbors, canals and harbors of refuge connected with the above named waters or any of them. This defendant denies that it cannot lawfully continue to divert and abstract without the permission of the Secretary of War, waters from Lake Michigan as it now does or that it cannot lawfully divert and abstract without the permission of the Secretary of War waters from Lake Michigan under the said Act of the General Assembly of the State of Illinois approved May 29th, 1889, and by and through the channels and works it has already constructed. And this defendant denies that the complainant will be in any manner injured by the diversion of

waters pursuant to said Act of the General Assembly of the State of [fol. 118] Illinois; and this defendant denies that the Interstate Navigation and Commerce of the United States will in any manner or to any extent be injured or destroyed by the proposed abstraction or diversion of water from Lake Michigan pursuant to and under said Act of the General Assembly of the State of Illinois of May 29, 1889, and as contemplated by the channels and works of this defendant hereinbefore and hereafter described.

21. This defendant states that the Sanitary District of Chicago is a municipal subdivision of the State of Illinois, consisting of an area of 386.2 square miles, situated on the shore of Lake Michigan at the southwestern end of said lake, with a shore line on said Lake Michigan of 33 miles and extending westward from said shore line, a distance of from 6 to 14 miles; that the land lying within the said territory is naturally drained into Lake Michigan for the most part through the Chicago and Calumet Rivers and their branches; that rising in the State of Wisconsin about 12 miles back from the shore of Lake Michigan, is the Desplaines River which flows in a southerly direction at a distance of about 10 miles from said lake and parallel to said lake until it, the said Desplaines River, reaches a point 15 miles southwest of the mouth of the Chicago River, when it turns to the southwest and at a distance of 45 miles beyond empties into the Illinois River; that at a distance of about 6 miles back from Lake Michigan and between said Lake Michigan and the Desplaines River is an elevation of land of approximately 11 feet above the low water level of Lake Michigan; that said elevation of land has been known as the Continental Divide, or the height of land on one side of which water flows into the Great Lakes thence into the Gulf of St. Lawrence, and on the other side of which water flows into the Desplaines River, thence into the Illinois and Mississippi Rivers, thence to the Gulf of Mexico; that the lowest point in said Continental Divide or elevation [fol. 119] of land was at a point about 8 miles by the water trail southwest of the mouth of the Chicago River; that at said point there was situated approximately on the summit of said divide a lake known as Portage Land and later as Mud Lake; that in times of high water the Desplaines River rose to the elevation of said lake and discharged itself over the divide and through the Chicago River into Lake Michigan; that the land lying to the East of said divide is low, flat, level and swampy land absolutely devoid of hills or elevations of land so that in times of high water large portions of said territory were overflowed; that the City of Chicago was established at the mouth of the Chicago River located approximately in the center of the territorial limits of this defendant; that the City of Chicago as it has expanded has stretched out over the branches of the Chicago River and over the territory of this defendant and from the time when the site where the City of Chicago is now located, was settled it has been menaced by floods and has had to contend with the natural disadvantages which it suffered by reason of the fact that the city was situated upon a flat, low, sandy soil and at the outlet or discharging point of a large drainage area; that from the various

times when this part of the territory of North America was discovered, there has existed at the mouth of the Chicago River a trading post; that from 1778, a fort, afterwards known as Fort Dearborn, was situated near the mouth of said river and on the south side thereof; that the said Fort and other buildings were practically destroyed in the Massacre of 1812; that the said Fort Dearborn was rebuilt by the United States in the year 1816; that during the early days the sewage of said Fort and the houses adjoining thereto was disposed of by cesspools and by other methods customarily used in small urban communities; that in the year 1837, the Village of Chicago was organized with 709 lawful voters; that between said year 1837 and the year 1854 when the City of Chicago was incorporated, the Village had grown with very rapid strides so that there [fol. 120] was a population of approximately 40,000 people in the City of Chicago in the year 1854; that by reason of the natural conditions which existed at Chicago as set out in detail hereinbefore, to-wit: the location of said City on a flat, low, marshy and sandy soil with only a slight elevation above the level of Lake Michigan, said City was confronted at that early day with the necessity of constructing a sewer system and was obliged to and did raise the level of its streets so as to permit the construction therein of a sewer system, and entered thereupon, upon the systematic construction and development of such a sewer system; that between the years 1854 and the year 1889 sewers were constructed in the territory of said City of Chicago north of the Chicago River, which drained into the Chicago River as far north as the boundaries of said City of Chicago; that the territory lying to the west of both the North Branch and the South Branch of the Chicago River constructed sewers draining into the Chicago River; that the territory lying south of the Chicago River and east of State Street constructed sewers draining into Lake Michigan; that is to say, said territory constructed sewers at 12th Street, 22nd Street and in 31st Street emptying directly into Lake Michigan; that the territory above described as being within the boundaries of the City of Chicago as it existed in 1889 was bounded on the north by Fullerton Avenue, at a distance of $2\frac{1}{2}$ miles north of the Chicago River, on the west by Western Avenue at a distance of between 4 and 5 miles west of Lake Michigan, and on the south by 39th street, a distance of approximately $4\frac{1}{2}$ miles south of the mouth of the Chicago River.

22. This defendant states that south of 39th Street and adjoining thereto was situated the flourishing village of Hyde Park with a population in 1889 of 41,000, the largest part of which had sewers emptying directly into Lake Michigan; that west of said village of Hyde Park was situated a town of considerable size known as the [fol. 121] Town of Lake, with a population of, to-wit: 58,661; that the sewage from said Town of Lake emptied into the South Fork of the Chicago River; that situated north of Fullerton Avenue, being the northern boundary of said City of Chicago was situated the Town of Lake View with a population of, to-wit: 42,339, which had several sewers emptying into Lake Michigan; that situated west of said

Town of Lake View was situated the Town of Jefferson, whose sewers emptied into the North Branch of the Chicago River, with a population in 1889 of, to-wit: 10,662; that the population of the City of Chicago in 1889 was, to-wit, 802,651; that by reason of the fact that the said City of Chicago and the towns of Lake View and Hyde Park emptied their sewage directly in to Lake Michigan, and that other portions of said City of Chicago, said Town of Jefferson and said Town of Lake emptied their sewage into the Chicago River, which in turn during portions of the year discharged itself into Lake Michigan, the said water of the Chicago River and the waters of Lake Michigan adjoining the said City of Chicago became and were badly polluted and the danger to health and condition of nuisance resulting therefrom became so aggravated as to necessitate the creation of this defendant for the purpose of abating the said pollution and nuisance thereby created, and providing a way as hereinafter more fully shown of disposing of the sewage of said City of Chicago and its adjacent towns and villages.

23. This defendant further states that the inhabitants of the Village of Chicago obtained their drinking water from shallow wells sunk into the sand, upon which said Village of Chicago was founded; that the water obtained therefrom consisted of the water of Lake Michigan or of the Chicago River which had seeped through the said sands and into said shallow wells and did not consist of natural underground water; that as the said Village grew in population to a [fol. 122] city, the said shallow wells became badly polluted by sewage and by the drainage water and refuse washed into said wells, and as a result the people of said city became obliged to obtain their water from Lake Michigan; that at first water wagons were employed to cart the water from the lake to the individual users and later a wooden pipe was laid in the streets; that subsequently a tunnel was extended out into Lake Michigan at Chicago Avenue and a crib built at the Lake extremity to prevent the end of said tunnels being injured or choked up by ice in the winter time; that the City of Chicago, and some of the towns or villages mentioned built in Lake Michigan six intakes, cribs and tunnels connected therewith for the purpose of obtaining water from Lake Michigan as follows: The Lake View Crib on the northern extremity of said city at a distance of two miles from the shore of Lake Michigan; the Carter H. Harrison Crib, situated at a distance of three miles from the shore; the Chicago Avenue Crib, situated at a distance of two miles from shore; the Four Mile Crib situated at approximately four miles from the shore and opposite the most densely populated portion of said City of Chicago, and the Hyde Park and Edward F. Dunne Cribs, two miles off shore, situated near the southern extremity of said City; that from each of the said cribs large tunnels extended in the earth under Lake Michigan to points on the shore where pumping stations are erected, by means of which water is pumped through the said tunnels and distributed through distributing pipes or water mains to the people of the City of Chicago, and adjoining towns; that the said distributing system is interconnected so that in case any one

crib or tunnel should be incapacitated, the other tunnels would furnish water to the people who would ordinarily take from that tunnel by means of inter-connecting pipes, but the said City of Chicago has spent in and about the construction of said cribs and water tunnels and in and about the construction of its distributing pipes and distributing tunnels large sums of money, in excess of, to-wit: [fol. 123] \$59,042,565.00; and that said City of Chicago has no other means or source from which it could obtain a water supply of the quality and amount adequate to its needs and is therefore obliged to and will be obliged to obtain its entire drinking water supply out of said Lake Michigan.

This defendant shows that by reason of the facts hereinbefore set forth that between the years 1880 and 1900 when this defendant opened its channel, as hereinafter set forth, the said waters of Lake Michigan, from which the inhabitants of the City of Chicago and environs were obliged to obtain their water supply, were badly polluted by reason of the fact that the sewage of said City of Chicago and adjoining towns and villages thereto, as well as the drainage water of a large drainage area was discharged into Lake Michigan.

24. This defendant states that from the earliest discovery of this country, there has existed between Lake Michigan and the Mississippi River a water route used as a highway of trade and travel; that this water route originally consisted of the Chicago River, its south branch and the west fork thereof, a ditch or canal in wet seasons and a portage in dry seasons, from thence into a lake known as Mud Lake, and a ditch or canal in wet seasons and a portage in dry seasons from said Mud Lake into the Desplaines River; from thence said route proceeded down the Desplaines River into the Illinois River and thence into the Mississippi River. That the said route was used for the purpose of carrying on trade and for the purpose of travel for upwards of 160 years, and that said use was prior to any improvements made by the United States or by the government then controlling the country now known as Canada.

That there existed also during the said period from the lower end of Lake Michigan through the Great Lakes and its connecting waters to the Atlantic Ocean two water routes, one by way of a portage around Niagara Falls and from thence on the St. Lawrence River [fol. 124] to the Atlantic Ocean; that the other water route consisted of a route through Georgian Bay, Lake Nipissing, and down the Ottawa River into the St. Lawrence River and thence to the Atlantic Ocean; that the said water route hereinbefore described from Lake Michigan into the Mississippi River, and the said two water routes from the lower end of Lake Michigan to the Atlantic Ocean were used for the purpose of trade and for travel prior to the year 1830 and for some time subsequently.

That about the year 1822 there was a great demand for improvement of these water routes; that on or about March 30th, 1822. the Congress of the United States passed an act granting to the State of Illinois certain public lands for the purpose of aiding the State of Illinois in constructing a canal "connecting the Illinois River

with the southern end of Lake Michigan;" that the said act of the Congress of the United States is in the words and figures as follows, to-wit:

Act of March 30, 1822

(3 U. S. Stat. at Large, p. 659)

An Act to Authorise the State of Illinois to Open a Canal Through the Public Lands to Connect the Illinois River with Lake Michigan. (Approved and in force March 30, 1822.)

Section 1. Be it enacted by the Senate and the House of Representatives of the United States of America, in Congress Assembled: That the State of Illinois be, and is hereby authorized to survey and mark, through the public lands of the United States, the route of the canal connecting the Illinois River with the southern bend of Lake Michigan; and ninety feet of land on each side of said canal shall be forever reserved from any sale to be made by the United States, except in the cases hereinafter provided for, and the use thereof forever shall be, and the same is hereby vested in the said State for a canal, and for no other purpose whatever; on condition, however, that if the said State does not survey and direct by law said canal to be opened, and return a complete map thereof to the treasury department, within three years from and after the passage of this act; or, if the said canal be not completed, suitable for navigation within twelve years thereafter; or, if said ground shall ever cease to be occupied by, and used for, a canal suitable for navigation; the reservation and grant hereby made shall be void and of none effect; Provided, always, and it is hereby enacted and declared, that nothing in this act contained, or that shall be done in pursuance thereof, shall be deemed or construed to imply any obligation on the part of the United States to appropriate any money to defray the expenses of surveying or opening said canal; Provided, also, and it is hereby further enacted and declared, that the said canal, when completed, shall be and forever remain a public highway for the use of the Government of the United States, free from any toll or other charge whatever, for any property of the United States, or persons in their service passing through the same.

(Sections through which the canal passes reserved until, etc.—The state may use necessary adjacent material without waste.)

2. And be it further enacted, That every section of land through which said canal route may pass, shall be, and the same is hereby reserved from future sale, until hereafter specially directed by law; and the said State is hereby authorized and permitted, without waste, to use any materials on the public lands adjacent to said canal, that may be necessary for its construction.

That the said act provided that if the State of Illinois did not make a survey and furnish a complete copy thereof to the Treasury Department within three years from and after the date of its passage, or if

the said canal be not completed suitable for navigation within twelve years thereafter, or if said ground shall ever cease to be occupied and used for a canal suitable for navigation, the reservation and grant made shall be void and of no effect; that the State of Illinois did not within the three year period provided for in the act return a complete map of the canal, and the rights granted under the said act lapsed pursuant to the terms thereof; that subsequently to the passage of the said act and prior to March 2nd, 1827, and subsequently [fol. 126] thereto, the Government of Great Britain refused to the citizens of the United States of America the free navigation of either or both of the water routes hereinbefore described, and particularly the free navigation of the St. Lawrence River; that the United States of America claimed that under the laws of nations the citizens of the United States were entitled to the use of such outlet for the purpose of carrying on trade and for travel.

That on or about the 28th day of January, 1826, a memorial was addressed to the Congress of the United States by the General Assembly of Illinois, which said memorial is attached hereto as Exhibit "F" and made a part hereof. That in and by the said memorial the General Assembly of the State of Illinois represented to the Congress that the construction of a canal "uniting the waters of Lake Michigan with the Illinois River will form an important addition to the great connecting chain of internal navigation."

That the action of the Government of Great Britain in refusing to the citizens of the United States the free navigation of the St. Lawrence River made it necessary for the United States to provide a free and unobstructed water route from the Great Lakes to the Atlantic Ocean by way of the Desplaines, Illinois and Mississippi Rivers and the Gulf of Mexico.

That thereupon on or about the 2nd day of March, 1827, the Congress of the United States passed an act granting to the State of Illinois certain public lands "for the purpose of aiding the State in opening a canal uniting the waters of the Illinois River with those of Lake Michigan." That the said Act of March 2nd, 1827, is in words and figures as follows, to-wit:

[fol. 127]

Act of March 2, 1827

(4 U. S. Stat. at Large, p. 234)

An act to grant a quantity of land to the State of Illinois for the purpose of aiding in opening a canal to connect the waters of the Illinois River with those of Lake Michigan. (Approved and in force March 2, 1827.)

Section 1. Be it enacted by the Senate and House of Representatives of the United States of America, in Congress Assembled, That there be and hereby is granted to the State of Illinois, for the purpose of aiding the said State in opening a canal to unite the waters of the Illinois River with those of Lake Michigan, a quantity of land equal to one-half of five sections in width, on each side of said canal, and re-

serving each alternate section to the United States, to be selected by the Commissioner of the Land Office, under the direction of the president of the United States, from one end of the said canal to the other; and the said land shall be subject to the disposal of the Legislature of the said State, for the purpose aforesaid, and no other; Provided, That the said canal when completed, shall be and forever remain a public highway for the use of the Government of the United States, free from any toll, or other charge, whatever, for any property of the United States, or persons in their service passing through the same; Provided, That said canal shall be commenced within five years and completed in twenty years, or the State shall be bound to pay to the United States the amount of any lands previously sold, and that the title to purchasers under the State shall be valid.

(Duty of the Governor of the State when the canal is located, etc.)

2. And be it further enacted, That so soon as the route of the said canal shall be located and agreed on by the said State, it shall be the duty of the Governor thereof, or such other person or persons as may have been, or shall hereafter be, authorized to superintend the construction of said canal, to examine and ascertain the particular sections to which said State will be entitled, under the provisions of this act, and report the same to the Secretary of the Treasury of the United States.

[fol. 128]

(Powers Given to the Legislature)

3. And be it further enacted, That the said State under the authority of the Legislature thereof, after the selection shall have been so made, shall have power to sell and convey the whole, or any part of the said land, and to give a title in fee simple therefor, to whomsoever shall purchase the whole or any part thereof.

That in and by the said Act of March 2nd, 1827, the Congress provided for the uniting of the waters of Lake Michigan with those of the Illinois River and made possible the establishment of an outlet from Lake Michigan, and thereby brought Chicago and its surrounding territory into the Mississippi River water-shed; that pursuant to the said Act of March 2nd, 1827, the State of Illinois by act of the General Assembly of January 9, 1836, provided for the construction of a canal of a certain depth to be supplied with water from Lake Michigan; that Section 16 of said act of the General Assembly of the State of Illinois of January 9th, 1836, entitled, "An Act for the construction of the Illinois and Michigan Canal," is as follows:

"That said canal shall not be less than forty-five feet wide at the surface, thirty feet at the base, and of sufficient depth to insure navigation of at least four feet, to be suitable for ordinary canal boat navigation, to be supplied with water from Lake Michigan and such other sources as the Canal Commissioners may think proper, and to be constructed in the manner best calculated to promote the permanent interests of the country, reserving ninety feet on each side of

said canal to enlarge its capacity whenever in the opinion of the Board of Canal Commissioners the public good shall require it."

That the plan of the said canal as originally contemplated under the act of the General Assembly of January 9th, 1836, provided for the flow of the waters of Lake Michigan by gravity into and through the canal and from thence into the Illinois River; that the plan originally proposed was known as the deep-cut plan; that on account of lack of funds the State of Illinois was unable to immediately construct the said canal upon that plan whereby the waters of Lake [fol. 129] Michigan would flow through the said canal by gravity into the Desplaines river and thence into the Illinois.

That in the year 1848 the said Illinois and Michigan canal was finally completed upon the plan known as the shallow-cut plan, by which water of Lake Michigan necessary to partly operate the said canal and its locks were caused to flow into the canal by means of pumps then installed; that from the time the said canal was opened until the construction of the main channel of the Sanitary District, it furnished a partial outlet for the sewage and drainage of the City of Chicago; that as the needs of the City of Chicago demanded, said canal was enlarged so as to provide a better and more suitable outlet for the drainage of the City of Chicago and its environs; that on or about the year 1860, to meet the demands of increased population of the City of Chicago, larger pumps were installed to pump more water from Lake Michigan through the Chicago River into the Illinois and Michigan Canal, thence into the Desplaines River, thus causing part of the drainage and sewage of the City of Chicago and its environs to flow into the Desplaines River; that in the year 1865, to meet the further needs of the City of Chicago with reference to furnishing an outlet for its drainage and sewage, the General Assembly of the State of Illinois passed an act entitled, "An Act to provide for the completion of the Illinois and Michigan Canal upon the plan adopted by the State in 1836;" (Approved February 16, 1865; in force April 16, 1865); that the said act of the General Assembly of the State of Illinois is in words and figures as follows, to-wit:

An Act to Provide for the Completion of the Illinois and Michigan Canal upon the Plan Adopted by the State in 1836. (Approved February 16, 1865, in Force April 16, 1865.)

(Preamble.)—Whereas, it has been represented that the City of Chicago, in order to purify or cleanse Chicago River, by drawing sufficient quantity of water from Lake Michigan, directly through it, [fol. 130] and through the summit division of the Illinois and Michigan Canal, would advance a sufficient amount of funds to accomplish this desirable object; and,

Whereas, the original plan of the said canal was to cut down the summit so as to draw a supply of water for navigation directly from Lake Michigan, which plan was abandoned for the time being, after a large part of the work had been executed, only in consequence of the inability of the State to procure funds for its further prosecution; and,

Whereas, under the law creating the trust the plan of the summit division of the canal was changed, the level being raised so as to require the principal supply of water to be obtained through the Calumet feeder, subject to serious contingencies, and by pumping on to the summit with the hydraulic works at Bridgeport; now, therefore,

(Summit Division to Be Completed.)—Section 1. Be it enacted by the People of the State of Illinois, represented in the General Assembly: That to secure the completion of the summit division of the Illinois and Michigan Canal, upon the original "deep cut" plan, with such modifications and changes of line, if necessary, as will most effectually secure the thorough cleansing or purification of the Chicago River, and facilitate the execution of the work, the City of Chicago, through its constituted authorities, may at once enter into an arrangement with the board of trustees of said canal, with a view to the speedy accomplishment of the work.

(Opening and Closing of Canal.)—2. The canal shall not be constructed of a less capacity than the plan adopted by the canal commissioners in 1836, nor shall the work of deepening it be prosecuted so as to materially interfere with the navigation. By consent of the board of trustees, however, the navigation may be opened later and closed earlier than usual in former years, but it shall never be diminished to a less time than six months.

(Right of Way.)—3. It shall be lawful for the City of Chicago to enter upon and use any lands which may be necessary for the right of way for said canal, if the route should in any part vary from the present line of canal, and to take and use any materials of any description, necessary for the prosecution of the work contemplated, along the line thereof; the value of the same to be determined in the mode [fol. 131] provided by the general laws of this State.

(Amount Expended to be Lien—Proviso.)—4. The amount expended by the City of Chicago in deepening the summit division of the canal, according to the plan adopted by the canal commissioners in 1836, shall be a vested lien upon the Illinois and Michigan canal and its revenues, after the payment of the present canal debt; and the net revenues of the canal shall all, thereafter, be applied to the payment of the principal and interest of the same expended in accomplishing the object of this Act, until the whole amount is reimbursed to the city; Provided, the cost shall not exceed two and a half millions of dollars.

(State May Refund.)—5. The State of Illinois may at any time relieve this lien upon the canal and revenues, by refunding to the City of Chicago the amount expended in making the contemplated improvement and the interest thereon.

That under the said Act of 1865 the City of Chicago was authorized to improve the said Illinois and Michigan Canal by deepening same and otherwise changing its cross section so that a certain amount of the waters of Lake Michigan, including the sewage and drainage of the City of Chicago, would flow into and through the Illinois and Michigan Canal by gravity, and thence into the Desplaines River.

That on or about the year 1871 the said improvement was completed; that from that time to the time hereinafter stated, to wit, the year 1884, the waters of Lake Michigan, including the sewage and drainage of the City of Chicago and its environs flowed by gravity through the said Illinois and Michigan Canal into the Desplaines River; that from the time the said pumps were installed, to wit: the year 1848, water from Lake Michigan was caused to flow through the Chicago River in various quantities into the said Illinois and Michigan Canal and from thence into the Desplaines and Illinois Rivers; that when the said Illinois and Michigan Canal was completed upon the deep cut plan, a greater amount of water was caused to flow from [fol. 132] Lake Michigan into the said canal and from thence into the Desplaines and Illinois Rivers; that by the said works and the operation of the said pumps, the Chicago River was caused to flow in a reversed direction away from Lake Michigan instead of towards the lake, its current and course was reversed during the greater portion of each year; that thereby the needs of the City of Chicago and its environs for an outlet for its sewage and drainage were partially met.

That an ordinance of the City of Chicago passed on June 5th, 1865, providing for the improvement of the said Illinois and Michigan Canal is attached hereto as Exhibit "G" and made a part hereof.

That in the year 1871 the General Assembly of the State of Illinois, by an act entitled, "An Act to relieve the lien of the City of Chicago upon the Illinois and Michigan Canal and revenues by refunding to said city the amount expended by it in making the improvement contemplated by 'An Act to provide for the completion of the Illinois and Michigan Canal upon the plan adopted by the State in 1836,' approved February 16, 1865, together with interest thereon as authorized by Section 5 of said act, and to provide for issuing bonds therefor," provided for the payment to the City of Chicago of the moneys expended by it in improving the said Illinois and Michigan Canal upon the plan provided for in the Act of 1836.

That in the year 1881 the Senate and the House of Representatives of the State of Illinois passed a joint resolution, which said resolution is in words and figures as follows, to wit:

Resolution of 1881 (Laws 1881, p. 159)

Concerning Chicago Sewage in Illinois and Michigan Canal

Whereas, The State of Illinois, in General Assembly, did, on the [fol. 133] sixteenth day of February, 1865, grant and authorize the City of Chicago in the State of Illinois, to deepen the Illinois and Michigan canal for the purpose of, and with the intent to better the system of sewage of the said City of Chicago by permitting a free flow of water from Lake Michigan through the Chicago River and said canal to the Desplaines and Illinois Rivers; and the City of Chicago did perfect said improvement in conformity with said permission; and,

Whereas, The great fire in the said City of Chicago on the eighth and ninth days of October, A. D. 1871, did so greatly damage the assessable property of a very large number of its citizens and taxpayers, and the people of the State of Illinois did, by its General Assembly, refund to the said City of Chicago the amount of the cost of deepening the Illinois and Michigan Canal said sum refunded being in gross two millions nine hundred and fifty-five thousand three hundred and forty dollars; and,

Whereas, The deepening of the canal as aforesaid has proved to be totally inadequate for the purposes intended, and the large amount of sewage of the City of Chicago, being far greater than the capacity of the canal and the water now passing through it to deodorize and render innocuous; and,

Whereas, The foulness of the water annually causes the death of millions of fish in the Desplaines and Illinois Rivers, that float to the shores and decay; and,

Whereas, Said sewage, in an entirely undecomposed and putrid mass, is carried by the current of the canal into the Desplaines River, and thence into the Illinois River, and in its foulest condition is thus transported to and below the City of Peoria, in said State, rendering the air at all points along its passage so impure and foul as to be exceedingly offensive and taking with it germs of disease of all kinds prevalent in the City of Chicago, and thus spreading them broadcast through the entire Desplaines and Illinois River valleys, causing thereby much illness as well as poisoning of the blood, and debilitating the systems of 200,000 people; and,

Whereas, Careful investigation leads our people to fear that an epidemic may spread over said section of the State of Illinois from the causes above stated; and,

Whereas, in addition to the above distress, there has been a great [fol. 134] loss of property, business industries, and to the communities in said region, by reason of the causes herein mentioned; and,

Whereas, Prior to the deepening of said Illinois and Michigan Canal, the water necessary for all purposes of navigating said canal and propelling of machinery was obtained from the Desplaines River and the Calumet feeder, through Lane's Lake; and,

Whereas, The bed of the Desplaines River, at the summit and thence westward along the line of and adjacent to the canal, is, at a low state of water, eight (8) feet above the surface level of the canal, and will average a supply of water sufficient for all canal and power purposes during the seasons of navigation; and,

Whereas, The supplying of the canal from these sources will so dilute and weaken the sewage of the City of Chicago, as to greatly relieve it of its foulness and stench to the great delight, relief and health of the people near to and bordering upon the line of the canal, the Desplaines and Illinois Rivers; therefore, be it

Resolved, By the Senate, the House of Representatives concurring herein, That the Board of Canal Commissioners of the Illinois and Michigan Canal be, and they are hereby, directed to cause sluiceways of sufficient capacity, with the proper guard-gates, to be opened from the Desplaines River to the canal, at or near the summit, in Cook

County, and at or near Lemont, in Cook County, and also to construct a dam across the former Calumet feeder at such suitable point as will cause the waters from Lane's Lake to flow into the canal; that said canal commissioners shall immediately commence, construct and improve said sluices and feeders in the order named, and pay for the same out of any moneys in their hands or control as canal commissioners, resulting from the earnings of the canal. The amount to be expended as above designated in the prosecution of said improvement shall not, however, exceed the sum of ten thousand dollars: Provided, that the Canal Commissioners shall first confer with the Mayor or other proper authorities of the City of Chicago, and if said city shall proceed without delay to cause a flow into the canal from the Chicago River sufficient to dilute and purify the waters and thus remedy the evils complained of, said flow to be not less than 60,000 cubic feet per minute, including the ordinary flow [fol. 135] into the canal from the Chicago River, or so much thereof as in their judgment said canal can carry, and if this shall be accomplished by the first day of September, 1881, the commissioners shall accept it in lieu of obtaining a supply of water from the other sources named: Provided, further, that said commissioners are hereby directed to take care of 60,000 cubic feet per minute above contemplated, if so furnished by the City of Chicago: Provided, further, that the adoption of this resolution shall not commit the State to a system of permanent drainage of Chicago sewage through either the canal or Desplaines or Illinois Rivers, but that the State reserves the right to require the City of Chicago, in future years, to take care of its sewage through other channels: And provided, further, that if the said City of Chicago shall erect pumping works for the purpose of causing such flow as aforesaid, the Canal Commissioners shall allow the said city to erect said pumping works upon the canal lands in Bridgeport; and said city shall support, control and manage said pumping works, subject to the direction of the Canal Commissioners relative to the amount of water to be received into the canal, from time to time, as the exigencies of the canal may require, but at the expense of the said City of Chicago; Provided, further, that the City of Chicago, its officers, agents or employes, shall derive from this resolution no right to control or exercise any authority over any of the gates, locks or dams of said canal.

That under the said resolution the Board of Canal Commissioners of the Illinois and Michigan Canal were directed to permit the City of Chicago, if it so desired, to install pumps or such other works so that the flow of water through the said canal from Lake Michigan should be not less than 60,000 cubic feet of water per minute; that thereafter, on or about the year 1884, the City of Chicago did install pumps and works at Bridgeport so that waters of Lake Michigan including the sewage and drainage of the City of Chicago and its environs in greater quantities was caused to flow through the Chicago River and the Illinois and Michigan Canal and thence into the Illinois River to the extent of approximately 60,000 cubic feet of water per minute.

[fol 136] 25. This defendant states that the inhabitants of the City of Chicago and its environs obtained drinking water from Lake Michigan; that Lake Michigan was, is and will be the only adequate source from which drinking water for the metropolitan population of the City of Chicago and its environs could, or may be obtained; that Lake Michigan furnishes an adequate, sufficient, and pure supply of drinking water, if unpolluted by sewage or drainage; that the said additional flow of water through the Illinois and Michigan Canal created by the pumping works installed as aforesaid in 1884 at Bridgeport did not serve to sufficiently cleanse the Chicago River of the pollution created by the sewage and drainage of the City of Chicago and its environs; that during a portion of each year the Chicago River did flow into the Lake thus carrying with its waters the sewage and drainage of the City of Chicago and its environs, thereby further polluting the water of Lake Michigan from which the inhabitants of the City of Chicago and its environs obtained their drinking water supply; that the metropolitan district comprising the City of Chicago and other cities and villages located adjacent thereto and along the shores of Lake Michigan from the Indiana State line to the north line of the County of Cook had increased in population so that the improvements made from time to time up to the year 1884 were insufficient and inadequate to prevent the pollution of the water of Lake Michigan by sewage and drainage; that on account of this rapid increase of population a greater amount of sewage and drainage each year was discharged directly into the Lake and caused a greater pollution from the flow of the Chicago River at times towards Lake Michigan; that the inhabitants of the City of Chicago and its environs were thus deprived of a pure water supply for domestic purposes; that the water used for domestic purposes became so polluted by sewage and drainage injected into Lake Michigan that pestilence ensued, and it became necessary that some further [fol. 137] and better improvements be made by which the pollution of the drinking water of the inhabitants of the City of Chicago and its environs would be prevented; that Lake Michigan at and near the points where the City of Chicago and adjacent towns obtained their water supply had become so polluted and contaminated by sewage discharged into Lake Michigan from the Chicago River and from sewers emptying directly into said Lake Michigan, along its shores in the vicinity of the said water supply intakes that the death rate from typhoid fever and other water borne diseases had become very high; that deaths from such causes were frequent through the said City of Chicago and adjacent towns; that the Chicago River and its branches was then a seething mass of septic sludge giving forth noxious and disagreeable odors which caused annoyance and danger to the people of Chicago and persons visiting or sojourning within its limits.

That thereupon the City of Chicago, through its proper corporate authorities, appointed a commission consisting of eminent sanitary experts for the purpose of making an investigation of the conditions and making a report as to the proper solution of the problem then confronting the people of Chicago and its environs who depended

upon Lake Michigan for their water supply; that the said commission was appointed in the year 1886, and after several years of investigation and study, it presented a report to the Mayor of the City of Chicago recommending the construction of a channel and works connected therewith substantially as provided for in the said Act of May 29th, 1889; that the said Act of May 29th, 1889, under which the Sanitary District of Chicago, defendant, was organized, was passed pursuant to the investigations made by the said commission and other investigations made and carried on at the same time by other persons; that the said act was passed for the purpose of providing for the organization of a sanitary district and the construction of channels and works by it so that the pollution of the [fol. 138] drinking water of the City of Chicago and its environs would be relieved and a pure water supply could be secured; thereby preventing death and pestilence among the people of the City of Chicago and adjacent towns, arising from impure water and preventing active public nuisance created by the conditions then existing in the Chicago River as hereinbefore set forth.

26. This defendant further states that by the Act of May 29th, 1889, the Sanitary District organized under said act was authorized to construct a channel of sufficient size to take care of, not only the sewage and drainage of the City of Chicago and its environs, but it was authorized also to take care of the sewage and drainage of the City of Chicago and its environs as the increase of population might require; that in and by said act it was provided that said channel should be constructed with a capacity and size to produce and maintain through the rock sections thereof an ultimate flow of not less than 600,000 cubic feet of water per minute; that said channel was to be constructed so that it would produce and maintain at all times a continuous flow of not less than 20,000 cubic feet of water per minute for each 100,000 of the population within such sanitary district.

That the Chicago River drains an area of, to wit: 420 square miles; that the run-off of the said Chicago River drainage area at times of heavy rains and high flow is approximately 10,000 cubic feet of water per second; that in order to prevent the Chicago River from reversing itself in times of high flood and driving so much of said sewage into Lake Michigan, it was necessary that the channel so to be constructed should have an ultimate capacity of not less than 600,000 cubic feet of water per minute, or 10,000 cubic feet of water per second; that in order to prevent the pollution of the waters of Lake Michigan from and by way of the Calumet River, it was necessary that a channel be constructed connecting the said Calumet River with the main channel thus provided to be constructed so that the flow of the Calumet River would be reversed; that in order to prevent the pollution of the waters of Lake Michigan from the cities, villages and towns, located on the shores of Lake Michigan immediately north of the limits of the City of Chicago, it was necessary that a channel or adjunct be constructed

to provide an outlet into the main channel of the Sanitary District for the said cities, towns and villages.

That it was further provided in and by said act that the said main channel when completed should be a navigable water of the United States and that the said United States should have the authority to take over and operate said channel for navigation purposes, but not for sanitary or drainage purposes; that the said channel to be constructed pursuant to said act was intended to be an enlargement or a replacement of the channel known as the Illinois and Michigan Canal.

27. This defendant states that pursuant to said Act of May 29th, 1889, on to wit, the 15th day of August, 1889, a petition was duly filed, signed by the requisite number of legal voters, asking that the limits of the district be defined by the tribunal provided for in the act and praying that an election be held to determine whether the territory thus defined should become the Sanitary District of Chicago; that the tribunal so authorized did thereafter define the limits of this defendant; that the said election was held pursuant to the said petition and pursuant to the provisions of said act on the 5th day of November, 1889; that at the election so held on the 5th day of November, 1889, it was decided in the affirmative, that the territory so theretofore defined by the tribunal authorized as aforesaid become the Sanitary District of Chicago; that subsequently thereto and on or about the 12th day of December, 1889, a special election was held for the purpose of electing trustees of the Sanitary District of Chicago, and that as a result of said election, trustees [fol. 140] were duly elected; that subsequently thereto, on or about the 18th day of January, 1890, the Board of Trustees so elected at the election held on December 12, 1889, after duly qualifying as such trustees pursuant to the act, held a regularly organized meeting of the Board of Trustees to begin the actual work of constructing the Sanitary District channel provided for in said act. That this defendant entered upon the construction of the said main channel and other works provided for under said act long prior to September 19th, 1890; that pursuant to the said act of the General Assembly of the State of Illinois of May 29th, 1889, and long prior to September 19th, 1890, the Board of Trustees of the Sanitary District of Chicago laid out the plans for and entered upon the construction of the main channel from Robey Street in the City of Chicago to Lockport, Illinois, of a capacity of eight hundred and forty thousand cubic feet of water per minute, or 14,000 cubic feet per second; that plans were at the same time made and considered for the construction of a channel to connect the Calumet River with the said main channel; that plans were then made for the construction of intercepting sewers on the south side of the City of Chicago converging at 39th Street on the Lake Shore by which approximately 2,000 cubic feet of water per second should be pumped from Lake Michigan, together with sewage accumulated at said point, through a conduit to be constructed into the South Fork of the South Branch of the Chicago River, and from thence into the said main channel.

That the said intercepting sewers so provided for on the south side of the City of Chicago and converging at 39th Street were for the purpose of intercepting sewage that then flowed directly into Lake Michigan, and thereby divert it into the main channel.

That the North Branch of the Chicago River was then a stagnant stream into which sewage from a large portion of the north side of the City of Chicago was emptied; that in order to create a current [fol. 141] into said North Branch and thereby cleanse it and abate a public nuisance, plans were then made for the construction of a conduit extending from the Lake Shore at Lawrence Avenue in the City of Chicago to the said North Branch through which approximately 666 cubic feet of water per second from Lake Michigan should be caused to flow, and from thence into the main channel.

That plans were then made and considered for the construction of a north shore channel by which the sewage from the cities, towns and villages on the Lake Shore immediately north of the northern limits of the City of Chicago should be diverted from Lake Michigan into the North Branch of the Chicago River and from thence into the main channel; that it was contemplated that approximately 1,000 cubic feet of water per second from Lake Michigan should be caused to flow through the said channel, together with the sewage and drainage of said district.

That plans were then made and considered for enlarging the cross section of the Chicago River, South Branch, and West Fork to accommodate sufficient water so as to cause the course, current and flow of the Chicago River to be at all times reversed, in times of high water as well as in times of low water, and to provide for an ultimate flow through the Sanitary District main channel of sufficient water to dilute and purify the sewage of the City of Chicago and its environs flowing into the main channel, pursuant to the provisions of the said Act of 1889.

That at the time the defendant entered upon the construction of the said works the said complainant had knowledge of the said act and the improvements provided for under said act.

28. This defendant further states that pursuant to the said Act of 1889, and pursuant to the said plans it constructed a channel through what is known as the rock section of the route described, extending from the controlling works at Lockport north to Willow [fol. 142] Springs, a distance of 14.93 miles, with a bottom width of 160 feet, a surface width of 162 feet, with a depth of at least 24 feet, and with a declivity of to wit, 1 foot in every 20,000 feet, having a capacity of flowing 840,000 cubic feet of water per minute or 14,000 cubic feet of water per second; that from said Willow Springs to Robey Street, Chicago, Illinois, a distance of to wit, 13.1 miles, through what is known as the earth section, the defendant made plans for a channel with a bottom width of, to wit, 202 feet and a surface width of to wit, 300 feet and a depth of not less than, to wit, 24 feet, with a declivity of to wit, 1 foot in every 40,000 feet; that then said defendant constructed said channel through said earth section as planned, except in this, that for a distance of, to wit,

7.8 miles from Robey Street to Summit the defendant left unexcavated a width of 92 feet, inasmuch as said channel was out of the territory having a rock stratum and was more easily capable of progressive development as the population of the district might increase; that the capacity of said channel from Robey Street to Summit, being a portion of the earth section was, to wit, 80 per cent of the flow of the rock sections, or, to wit, 500,000 cubic feet of water per minute, or to wit, 8,000 cubic feet of water per second; that long prior to the filing of said Bill of Complaint herein, this defendant made and entered into a contract with the Great Lakes Dredge & Dock Company, under which the said main channel in the earth sections was to be enlarged by widening the same, so that through the said earth section, the said main channel would have a capacity of flowing in excess of 10,000 cubic feet of water per second; that before the filing of the said Bill of Complaint herein, the work provided for under said contract was substantially completed, so that the said main channel through the said earth sections at the time of the filing of said Bill of Complaint herein, had a capacity of flowing in excess of 10,000 cubic feet of water per second.

[fol. 143] 29. This defendant states that the aforesaid main channel from Robey Street to the controlling works at Lockport, Illinois, was completed and ready for use on or about September 21, 1898; that on or about January 11, 1899, the defendant, pursuant to the said Act of 1889, and more particularly Section 27 thereof, reported such fact to the Governor of the State of Illinois; that the Governor of the State of Illinois, pursuant to the said act, thereupon appointed a special commission to inspect and certify as to the completion of the main channel as required by the Act of 1889 aforesaid; that pursuant to the report of the said commission the then Governor of the State of Illinois did, on, to wit, January 17, 1900, authorize and direct the opening of said channel, the said commission having reported that the channel was completed in accordance with the provisions of said Act of 1889.

30. This defendant states that on, to wit, January 17th, 1900, the said channel was opened and the flow of the Chicago River, the South Branch and the West Fork thereof, as far as Robey Street, in the City of Chicago was reversed, and water was caused to flow out of Lake Michigan, through the Chicago River, the South Branch and the West Fork thereof, and down the Sanitary District channel from Robey Street and discharged into the Desplaines River at Lockport and from thence into the Illinois River, and from the Illinois River into the Mississippi River, and continuing to the Gulf of Mexico.

31. This defendant states that contemporaneously with the construction of the said main channel this defendant carried on certain construction work in the Chicago River, the South Branch thereof, and the West Fork to provide a larger cross section; that the purpose of enlarging the cross section was to enable the Chicago

River, the South Branch and the West Fork thereof to flow an increased quantity of water.

That on or about June 16, 1896, the defendant made application [fol. 144] to the Secretary of War for a permit to widen and deepen the Chicago River at certain points in accordance with a map or plan of such construction attached to the said application; that a copy of said application, together with a copy of said map or plan, is by express reference thereto, made a part hereof, and is attached hereto, marked "Exhibit H."

That on or about July 3, 1896, the Secretary of War granted a permit to the defendant to improve the Chicago River in accordance with the said application and the map accompanying the same, a copy of which said permit is, by express reference thereto made a part hereof and is attached hereto and marked Exhibit "I."

That on or about the 26th day of April, 1900, and on or about the 7th day of June, 1900, the said defendant made application to the Secretary of War for permits to make certain further changes, alterations and improvements in the South Branch of the Chicago River so as to accommodate a flow of water through the said South Branch and the West Fork thereof to the extent of the said applications, together with certain plans of the said improvement attached thereto, copies of which are by express reference thereto, made a part hereof and are attached hereto, marked Exhibit "J," and "JI," respectively, and said plans are marked K1 and K2, respectively.

That thereafter, and on or about July 11, 1900, the Secretary of War granted two permits to this defendant to make the changes, alterations and improvements in the South Branch of the Chicago River as shown upon the plans attached to said applications, that a copy of said permits are attached hereto and made a part hereof, and marked Exhibit "I" and "LI."

That pursuant to said permits of July 3, 1896, and July 11, 1900, and pursuant to certain other permits granted by the Secretary of War to this defendant at various times, to which other permits reference is hereby expressly made, this defendant improved the said [fol. 145] Chicago River, South Branch thereof and the West Fork, so that the said rivers have been enlarged sufficiently to accommodate a flow of water of at least 8,000 cubic feet per second with a velocity of not to exceed $1\frac{1}{4}$ miles per hour; that the volume of water above specified flowing as aforesaid through the said rivers and into and through the main channel of the Sanitary District, together with the 2,000 cubic feet of water per second emptying into the South Fork of the said Chicago River from the 39th Street Pumping Station will not create a current in any way injurious to navigation.

That in the course of the improvement of the said Chicago River and the widening and deepening thereof, and in the building of bridges, this defendant expended in excess of \$10,000,000 as hereinbefore set forth: that a large part of the said money so expended was for the purpose of improving navigation in the said Chicago River, South Branch and West Fork; that the said Chicago River was deepened by this defendant to a depth of 26 feet from a depth

of 17 feet at all points and widened to a width of 200 feet at all points, from a width of approximately 100 feet.

That pursuant to the said Act of 1889 the said main channel or canal constructed by this defendant as aforesaid from Robey street to Lockport, Illinois, is of a depth of at least 24 feet at all points and of a width of at least 162 feet at all points; that the said Chicago River, the South Branch and the West Fork thereof as improved by this defendant, and the main channel constructed as aforesaid by this defendant, are of sufficient capacity to enable the largest vessels, freight or passenger, traversing the Great Lakes, to pass through or into same; that by virtue of the works of this defendant the largest vessels traversing the Great Lakes can pass through the said Chicago River and its branches as aforesaid to the City of Joliet; that the said main channel of this defendant as heretofore constructed is an enlargement, or takes the place of the old Illinois and Michigan Canal; [fol. 146] that since the completion of the said main channel the said Illinois and Michigan Canal has been abandoned; that the said improvement of the Chicago River and its branches, for the purpose of improving navigation was in accordance with the plans of the complainant in connection with the improvement of navigation upon the said rivers.

32. This defendant states that pursuant to an Act of the General Assembly of the State of Illinois entitled "An Act in relation to the Sanitary District of Chicago to enlarge the corporate limits of said district and to provide for the navigation of the channels created by said District, and to construct dams, water-wheels and other works necessary to develop and render valuable power arising from the water passing through its channels, and levying taxes therefor," approved May 14th, 1903, in force July 1, 1903, attached hereto as part of Exhibit "A," this defendant extended its main channel to the City of Joliet; that the said work was completed on or about the year 1907; that the portion of the said main channel constructed pursuant to said act was of the same depth and width as the portion of the main channel constructed pursuant to the Act of 1889; that under said act the said defendant constructed also certain works for utilization of water power at Joliet; that the water power so developed is approximately 30,000 horse power; that each horse power is worth approximately \$30.00 per year net as developed at Joliet; that this defendant expended in the construction of the said water power development approximately \$5,000,000; that if the flow of the said main channel of the Sanitary District were limited to 4,167 feet there would be little, if any, power developed or available at Joliet. That this defendant now sells and disposes of the electrical energy developed as aforesaid by its works at Joliet, Illinois; that such revenue is used for the purpose of partially defraying the other expenses of this defendant; that the hydro-electric plant constructed [fol. 147] as heretofore set forth near Joliet, Illinois, was constructed to utilize the water power incidentally developed by the flow through the main channel of this defendant for the purpose of diluting sew-

age arising from the population within the limits of the Sanitary District of Chicago; that the operation of the said hydro-electric plant and the development and sale of electrical energy does not in any way increase the amount of water caused to flow through the said main channel; that this defendant pursuant to the said Act of 1889 and the acts amendatory and supplementary thereto constructed the said North Shore Channel as an adjunct or addition to its main channel to furnish an outlet for the sewage and drainage of the District immediately north of the northern limits of the City of Chicago, comprising certain cities, towns and villages located along the shore of Lake Michigan and immediately north, as aforesaid, of the northern limits of the City of Chicago; that the said North Shore channel was completed on or about the year 1910; that there was also constructed at the point where the said North Shore channel intersects with Lake Michigan pumping works of sufficient capacity to cause approximately 1,000 cubic feet of water per second to flow into and through the said North Shore channel for the purpose of diluting the sewage and drainage of the said district.

34. This defendant states that pursuant to the said act of 1889 there was constructed by this defendant and the City of Chicago certain intercepting sewers and pumping works at Lawrence avenue, in Chicago, and the Lake, and at 39th Street, Chicago, and the Lake, by which all the sewage formerly flowing directly into Lake Michigan is diverted into the main channel aforesaid of this defendant.

That in the year 1910 this defendant entered upon the construction of an adjunct or addition to its main channel known or called the Calumet-Sag Channel extending from a point on the Little Calumet River at Blue Island to a point on the main channel of [fol. 148] this defendant at Sag, Illinois; that the said channel is now in the course of construction; that it is being constructed of a capacity to flow approximately 2,000 cubic feet of water per second, and is capable of enlargement, so that it will accommodate a flow of 4,000 cubic feet per second of water; that the said Calumet Sag Channel is designed to furnish an outlet for the sewage and drainage arising in what is called the Calumet district lying immediately south of the southern limits of the City of Chicago and thus prevent the pollution of the drinking water of the City of Chicago and environs by and through the Calumet River; that the said Calumet Sag Channel is also designed to furnish a certain amount of water by which to dilute sewage and drainage flowing through the main channel of the Sanitary District, and arising in that portion of the Sanitary District tributary to the Chicago River and its branches and the main channel of this defendant.

35. This defendant states that the said works constructed or being constructed and the said improvements made upon the Chicago River and its branches as hereinbefore described were made necessary by virtue of the said Act of the General Assembly of Illinois of 1889 and acts amendatory and supplementary thereto; that the

said works and improvements provide a complete and comprehensive system by which an outlet is provided for the sewage accumulating in the Metropolitan district comprised within the limits of the Sanitary District of Chicago, and for the drainage arising therein; that the said works so constructed and being constructed does and will prevent the pollution of the drinking water of the inhabitants of the Sanitary District and provide pure water for drinking and domestic purposes for the inhabitants of the District; that the said Act of 1889 and acts amendatory and supplementary thereto were passed and adopted by the General Assembly of the State of Illinois pursuant to and under the police power existing in the State for the purpose of protecting the health and lives of the people within [fol. 149] said district and within the State of Illinois as well as persons sojourning or visiting within the limits of this defendant.

That the channels and works constructed and to be constructed provides the only method by which the sewage and drainage of the inhabitants of the Sanitary District could be diverted from Lake Michigan and a pure water supply for domestic purposes secured for such inhabitants; that the drainage basin of the Great Lakes and that of the Mississippi River is divided by a ridge of ground within approximately 8 miles of the shore of Lake Michigan; that the summit of the said divide, known as the Continental Divide, was but a few feet above the level of Lake Michigan or Chicago City datum; that the City of Chicago and its environs is located in this regard differently from any other city on the Great Lakes; that by virtue of the nearness of the Mississippi River drainage basin and the insignificance of this so-called Divide it was possible to provide in the manner above set forth an outlet for the sewage and drainage of the City of Chicago and its environs so that the water of Lake Michigan could be maintained pure and undefiled by any pollution from sewage or drainage arising within the City of Chicago and other cities and villages located upon the shore of Lake Michigan near the said City of Chicago.

That this defendant and the City of Chicago have expended in and about the construction of the works and in making the improvements above mentioned the sum of to-wit, \$82,000,000 to protect the said water supply; that of this amount the City of Chicago has expended approximately \$6,500,000 in and about building intercepting sewers, pumping stations and other works.

36. This defendant further states that the said works constructed and the improvements made by this defendant hereinbefore set out and the works being constructed, were, and are necessary to preserve the health of the people within The Sanitary District of Chicago [fol. 150] and to protect the lives of the people therein; that the said The Sanitary District of Chicago comprises a large Metropolitan district within the County of Cook and various cities and villages located in said county; that this defendant attaches thereto a map or plat marked Exhibit "M," which is by express reference made a part hereof and attached hereto, which represents and shows the territorial boundaries of this defendant within which there is

comprised substantially three hundred eight-six square miles; that within the boundaries of said District there are situated the following cities, villages and towns: Chicago, Evanston, Glencoe, Winnetka, Wilmette, Shermerville, Glenview, Morton Grove, Niles, Cicero, Stickney, Evergreen Park, Morgan Park, Blue Island, Riverdale, Oak Park, Berwyn, Forest Park, River Forest, Maywood, Riverside, Brookfield, Bellwood, Franklin Park, Melrose Park, River Grove, Dolton, Harvey, West Hammond, Worth, Bremen and Calumet; that the population within the limits of the said The Sanitary District of Chicago exceeds two million five hundred thousand.

37. This defendant states that the Congress of the United States has at various times appropriated moneys for the improvements of the Illinois River and for the making of surveys and investigations to determine the best method by which the navigation upon the said Illinois and Desplaines rivers could be improved in connection with the Main Channel heretofore constructed by this defendant; that the said complainant built in the lower Illinois River certain dams at La Grange and Kampsville for the purpose of improving navigation upon the said Illinois River; that the said dams were built and constructed in connection with and for the purpose of supplementing the improvement of navigation made by the State of Illinois by the construction of two dams, one at Henry, Illinois, and the other opposite Copperas Creek on the Illinois River; that the said dams constructed by the complainant and by the State of Illinois were provided with locks by which vessels could pass from [fol. 151] the level of the water created by the dam at the lock to the level below, or vice versa; that during the period when the said main channel of this defendant was under construction, prior thereto and since the opening of same, the Congress has appropriated moneys for the purpose of making surveys and investigations for a Deep Waterway, extending from the terminus of the Main Channel of this defendant, at or near Lockport, Illinois, on the Desplaines and Illinois Rivers to the Mississippi River and from thence to the Gulf of Mexico; that all Boards of Engineers and all Engineer Officers of the Corps of Engineers of the United States Army, who have made reports in regard to such Deep Waterway pursuant to the appropriations made by the Congress have recommended the improvement of the Desplaines and Illinois Rivers to provide Deep Water navigation, and the plans and recommendations made by such engineers contemplate the use of the said Main Channel of this defendant as part of, and a link in such Deep Waterway and the use of the water flowing through and contemplated to be passed through the Main Channel of this defendant in the Desplaines and Illinois Rivers for the purpose of such navigation; that the International Waterways Commission created by an Act of Congress and by an Act of the Parliament of the Dominion of Canada by report made on January 11th, 1909, recommended that 10,000 cubic feet of water per second should be allowed to be diverted by this defendant from Lake Michigan; that this defendant constructed its said Main Channel, with a capacity of not less than Ten Thousand

(10,000) cubic feet of water per second, with the intended purpose to comply with the plans and purposes of the United States; that the United States approved of the said plans and purposes and the Congress of the United States co-operated with this defendant and invited this defendant to co-operate with complainant and joined with this defendant in the improvement of the Chicago River, as has [fol. 152] been more fully set out; that the Attorney General of the United States, on December 14, 1909, caused suit to be instituted in the name of the United States against the Economy Light & Power Company, in the Circuit Court of the United States, Eastern Division, Northern District of Illinois; that the said suit was instituted by way of a bill of complaint filed in said court to enjoin the said defendant, the Economy Light & Power Company, from constructing a dam in the Desplaines River; that in and by said bill of complaint, the said complainant further recognized the right of this defendant to divert the amount of water contemplated in and by its said work and in and by the said Act of May 29, 1889; that in and by said bill of complaint the said United States of America alleged:

"That in connection with the construction of said Sanitary District Canal, and in creating the system of waterways resulting from the construction of said canal, said State of Illinois has caused the quantity of water flowing through said Desplaines River below the point at which it connects with said canal to be largely increased, and that said portion of said river has been continuously since the opening of said canal, and is now, water navigable in fact and a part of the navigable waters of the United States and subject to the jurisdiction and control of the Federal Government. * * *

That in connection with and as a result of the construction of said Sanitary District Canal and the diversion of said water from Lake Michigan, said Sanitary District of Chicago, acting under authority of said State of Illinois, has largely increased the navigability of said Des Plaines River and that continuously since the opening of said canal there has been, and is, in said portion of said Des Plaines River below the point at which it connects with said canal, a body of water navigable in fact and which, by virtue of its connection with other navigable waters is to be deemed a part of the navigable waters of the United States and subject to the jurisdiction and control of said United States."

That the said complainant, in and by its said bill of complaint in the said cause wherein the Economy Light & Power Company is [fol. 153] defendant, based its right to an injunction enjoining the construction of the said dam upon the fact that the State of Illinois had, in and by and pursuant to the Act of May 29, 1889, created a navigable waterway in the Desplaines River at the points described in the said bill of complaint; that the said navigable water thus created and connected with and a part of the system of navigable waterways created by The Sanitary District of Chicago pursuant to the said Act of 1889 and which said waterways thus created were

connected with and a part of the other navigable waters of the United States; that, inasmuch as the said Act of 1889 provided for the recovery of damages of all and every kind sustained to land by virtue of the construction, operation and continuance of said main channel, that the Economy Light & Power Company had the right to obtain compensation for any damage that might have resulted to it by virtue of its being deprived of rights in the said Desplaines River at the points mentioned in the said bill of complaint which existed prior to the said Desplaines River becoming a navigable waterway pursuant to the said Act of 1889.

38. This defendant states that, at the time the said Act of 1889 was passed by the General Assembly of Illinois, and at the time the plans for construction of the said Main Channel were completed, and during the construction thereof, and before the opening of the said channel, the said United States had knowledge of and knew of the passage of the said Act, the making of the plans and the opening of the channel; that, at or about the time of the opening of the said channel, various measurements were made upon the St. Clair River to determine the increment thereof, by which the effect of a diversion of a certain number of feet of water from Lake Michigan outside of the regular outlet could be ascertained; that the measurements were made also, in the Niagara and St. Lawrence Rivers to determine the increment of such rivers respectively; that the said measurements [fol. 154] were made by the United States Lake Survey, under the direction of the Corps of Engineers of the United States Army; that, after the said measurements were made to determine the increments of the said rivers, it was claimed by various of the Engineer officers that the levels of Lake Michigan, Lake St. Clair, Lake Erie and Lake Ontario, and the channels connecting them, would be affected by the diversion of approximately ten thousand (10,000) cubic feet of water per second to the extent of approximately six (6) inches; that, thereafter, the United States, in providing for the improvement of the St. Mary's, St. Clair and Detroit Rivers and other channels connecting the Great Lakes with one another, determined upon a reference plane for such improvements at approximately six (6) inches below the reference plane that had theretofore been adopted, and the said United States did thereby acquiesce in and agree to such diversion.

And this defendant states that if the diversion of water from Lake Michigan has or will lower the levels of the water of either or all of the following named waters: Lake Michigan, Lake Huron, Lake St. Clair, Lake Erie, Lake Ontario, Sault Ste. Marie, St. Mary's River, St. Clair River, Detroit River, Niagara River, and St. Lawrence River and of all or any of the harbors, channels, canals or rivers connected therewith, it is feasible and practicable to compensate for the lowering of such levels by the building of proper works at either the St. Clair River, Detroit River, Niagara River, St. Lawrence River or of all of them; that the International Waterways Commission in their report on the regulation of Lake Erie issued in the year 1910, recommended the building of regulation works to regulate the levels of Lake Erie and thereby raise such levels approximately one foot at

low water times; that the said International Waterways Commission estimated the cost of building such regulation works at approximately seven hundred ninety-six thousand dollars; that the said International Waterways Commission has recently made a further report [fol. 155] upon the building of compensating or regulating works to regulate the levels of the various lakes in order to raise the level of Lake Erie approximately one foot; that the estimate made for said works by the said Commission as the cost of said work is approximately three million dollars; that such regulation works would more than offset any alleged lowering of the levels of Lake Michigan, Lake Huron and Lake Erie by the diversion of water through the Chicago Drainage Canal as contemplated under the said Act of 1889 and as proposed by the works of this defendant already constructed and in the process of construction; that the levels of the water of Lake Michigan, Lake Huron, Lake St. Clair, Lake Erie, Lake Ontario, Sault Ste. Marie, St. Mary's River, St. Clair River, Detroit River, Niagara River, St. Lawrence River and all the harbors, channels, canals and rivers connected therewith, have been lowered by the works constructed by the United States, by Canada, by private individuals and corporations, by and with the consent and acquiescence of the said United States; that the level of said waters has not been lowered by this defendant.

39. This defendant states that the said complainant, by consenting to the improvement of the Chicago River to accommodate the flow of water through the Main Channel of this defendant as contemplated under the Act of 1889, by the appropriation of money for the purpose of determining the feasibility of improving waterways to connect with the navigable waterways created by this defendant, by acquiescing in and acknowledging the right to use the said works and to abstract the water from Lake Michigan contemplated by said Act of 1889, solemnly asserted in the said case of the United States vs. The Economy Light & Power Company, above referred to, by allowing this defendant to proceed with the construction of said works with the knowledge of the said complainant, without making any objection thereto, but on the contrary, consenting to and agreeing to [fol. 156] various improvements made necessary by virtue of the said system of works provided for under said Act of 1889, has estopped itself from making any objection to or attempting to prevent further use and continuance of the said works for the purpose for which they were created; that, after the initiation of the said work of the said Sanitary District upon its said system of drainage, the said United States adopted the improvements contemplated and being then carried on by the Sanitary District in the Chicago River and its various branches and supplementing said improvements so being made by this defendant, and inviting further improvements, itself expended approximately one million dollars (\$1,000,000.00) in the improvement of the Chicago River from Rush street to the head of the West Fork.

40. This defendant states that this defendant has never recognized the right of the United States in any manner to interfere with the

construction, operation or use of the Main Channel of the Sanitary District or any of its adjuncts or additions; that it has never recognized the right of the United States in any manner to determine or direct how the said Main Channel or its adjuncts or additions, as hereinbefore mentioned, should be operated or used, or the amount of water that should be abstracted from Lake Michigan through its various channels or adjuncts or additions thereto to carry out the provisions of said Act of May 29, 1889; that this defendant made application for the permits mentioned and described in the Bill of Complaint, copies of which are attached to the Bill of Complaints as exhibits, by reason of the close blending or association of the two governments, namely, the Governments of the State of Illinois and the United States of America; that this defendant desired, if possible, to obtain the consent of the Secretary of War to the construction, operation and use of its works but this defendant never has admitted and does not admit, but on the contrary denies the right of the United States to determine the amount of water that should be [fol. 157] caused to flow through the said Main Channel or its additions or adjuncts, or the manner of such flow; that the permit of May 8, 1899, granted to this defendant the right to open the said Main Channel and use the same for the purposes and to cause the amounts of water to flow therein as contemplated and provided for under the Act of May 29, 1889; that the only condition mentioned in the said permit limiting the amount of water which the Secretary of War consented should be allowed to flow through the said Main Channel, was the preservation of suitable conditions of navigation, upon the Chicago River itself; that the said condition was inserted in the said permit and made necessary by virtue of the fact that, at that time, the said Chicago River had not been widened and deepened to the extent that it was proposed to be; that the orders subsequently given by the Secretary of War to reduce the flow or to increase the flow of water through the Chicago River were based entirely upon the conditions of the Chicago River for the purpose of navigation; that in and by the said permit of May 8, 1899, and the subsequent orders and permits issued by the Secretary of War, the said United States recognized the right of this defendant to abstract water from Lake Michigan and only limited the amount of such abstraction by the amount that the Chicago River could carry without injury to navigation thereon; that, subsequently to the issuance of the said permits, the said project of this defendant, for the widening and deepening of the said Chicago River, for a capacity of at least eight thousand (8,000) cubic feet of water per second, was carried out pursuant to the consent of the Secretary of War, as evidenced by the permits hereinbefore mentioned; that, before the filing of the bill of complaint herein, this defendant improved the said Chicago River by widening and deepening the same, so that at least eight thousand (8,000) cubic feet of water per second could flow and was flowing into and through the said Chicago River, the South [fol. 158] Branch and West Fork thereof, without creating a current of more than one and one-quarter ($1\frac{1}{4}$) miles per hour and without creating a condition which would be or was injurious to navigation,

but on the contrary, the condition so created by this defendant greatly improved the navigation in all respects of said Chicago River and all its branches.

41. This defendant states that the said water discharged from the said main channel into the Desplaines River, flows through said Desplaines River and empties into the Illinois River; that, as a result of the discharge of water into the said Illinois River, the said Illinois River has become navigable without the use of the Government dams or the State dams heretofore constructed, so that the Illinois River may be traversed by boats of a deeper draft than could have traversed the said Illinois River by the use of the locks and dams constructed by the United States Government and the State of Illinois, namely, the Kampsville and La Grange dams by the United States and the Henry and Copperas Creek dams by the State of Illinois; that the Illinois River has become clear, which prior to the opening of the said main channel was a sluggish, slow moving body of water, badly polluted by sewage discharged by the City of Chicago and many towns and villages situated along said Illinois River; that by reason of the said increased flow of water in said river, fish life in said river has increased very rapidly, and the said Illinois River has become more healthful to the people living thereon; that the cities and towns located on the said Illinois and Desplaines Rivers are enabled, by virtue of the said flow of water, created by this defendant, to discharge their sewage into the said river without creating an offensive condition or public nuisance; that, if the said flow of the said Illinois River had not been increased by the waters caused to flow therein by this defendant, or, if the flow through the main channel of this defendant were limited to four thousand one [fol. 159] hundred and sixty-seven (4,167) cubic feet of water per second, or to any amount materially less than required by said Act of May 29, 1889, it would be necessary for the cities and towns located on the said Illinois and Desplaines Rivers to expend vast sums of money in treating the sewage now discharged into the said Illinois River, in order to prevent an offensive condition or public nuisance.

42. This defendant states that, since the opening of the said main channel and the completion and opening of additions and adjuncts thereto, including the intercepting sewers hereinbefore described, the health conditions in the City of Chicago and other towns and villages located within the limits of The Sanitary District of Chicago have greatly improved; that the death rate from water borne diseases has greatly diminished; that in and by the said works created by this defendant pursuant to the said Act of 1889 and acts amendatory and supplementary thereto, persons living or sojourning within the district have acquired a pure water supply for drinking and other domestic purposes; that the City of Chicago is a great railroad and commercial center, and is a primal market; that a great many persons who do not reside within the limits of the Sanitary District come each year from all parts of the United States and the world to the City of Chicago and remain therein for various periods; that the total number of persons coming into and leaving the City of Chi-

chicago each year approximates twenty-seven million (27,000,000) people; that there are, in addition, approximately forty-seven million (47,000,000) persons who do not reside within the City of Chicago who come to the City from nearby or suburban towns and villages during the course of each year; that all such persons traveling through said City of Chicago or sojourning therein for any length of time, are interested in the better health conditions produced by a pure and unpolluted or undefiled drinking water supply.

[fol. 160] 43. This defendant states that, if the injunction prayed for by the complainant herein is granted, and this defendant is obliged thereby to limit its flow of water to four thousand, one hundred sixty-seven (4,167) cubic feet per second, a large portion of the moneys already expended by this defendant and the City of Chicago in and about the construction and installation of the works hereinbefore mentioned and described, will have been used for no purpose and the said works will become practically useless and of no substantial efficiency or value; that the said City of Chicago and other cities, towns and villages within the boundaries of this defendant have constructed their sewers, water mains, and other sewage disposal works and water supply works upon the basis that the works of this defendant were and are permanent, to endure for all time, and could be used and operated as contemplated by the said Act of May 29, 1889, and acts amendatory and supplementary thereto; that, if the said flow of water through the said main channel of this defendant and its adjuncts and additions should be limited to four thousand one hundred sixty-seven (4,167) cubic feet of water per second, it will be necessary, in order to prevent said sewage from becoming a public nuisance, to construct a plant or plants for the disposal of sewage by some other method or methods; that the construction of such plant or plants would cost upwards of one hundred millions of dollars (\$100,000,000) and the annual operation of such a system would cost over seven million dollars (\$7,000,000) which capitalized at five per cent (5%) would mean a total investment of two hundred and forty million dollars (\$240,000,000); that it would be necessary, also, to construct, in connection with the said sewage disposal works, filtration works to filter all the drinking water and water used for domestic purposes of the inhabitants of said District and the floating population thereof, which would cost upwards of twenty-five millions of dollars (\$25,000,000) and which would [fol. 161] require an annual operation charge of at least two million dollars (\$2,000,000), which, capitalized at five per cent (5%) would be equal to an original investment of forty million dollars (\$40,000,000); that the City of Chicago and the other cities, towns and villages located within the boundaries of the Sanitary District, would be thus damaged to the extent of approximately three hundred million dollars (\$300,000,000) and the works of this defendant already completed and in operation would become useless and the moneys expended by this defendant in the construction thereof, approximately eighty-two million dollars (\$82,000,000), would be expended for no practical purpose so far as taking care of the sanitary condi-

tions of this defendant are concerned; that the only method by which this defendant can efficiently take care of and remove the sewage and drainage arising within its limits and thereby protect the water supply of the inhabitants of the City of Chicago and its environs is the one laid out under the said Act of May 29, 1889, and acts amendatory and supplementary thereto; that the method or methods which it would be necessary for this defendant to adopt, if the flow of water through its main channel were limited to four thousand, one hundred sixty-seven (4,167) cubic feet per second would not accomplish the purpose now secured by the works of this defendant constructed as hereinbefore set forth, nor would such works constructed under a plan made necessary by such limitation of flow of water in any manner equal the efficiency of the works already constructed to be operated pursuant to the provisions of the said Act of 1889.

44. This defendant states that the State of Illinois under the said Act of 1889 and acts amendatory and supplementary thereto, provided a comprehensive and effective method to dispose of the sewage of the metropolitan district comprised within the boundaries of this defendant, and to provide pure drinking water [fol. 162] for the inhabitants thereof and its floating population, to wit: the method of treating the said sewage by dilution and diverting the same from Lake Michigan; that this defendant is without power to dispose of sewage and to provide a pure drinking water supply by any other method than the one provided for under the said Act of 1889 and acts amendatory and supplementary thereto; that, if it were given power to dispose of the sewage by some other method and to procure a pure drinking water supply in some other manner, the constitutional limitation of the State of Illinois upon the creation of indebtedness by municipalities would prevent this defendant from providing the moneys with which to build sewage disposal works and filtering plants to meet the conditions which would be created by the decrease of the flow of water to four thousand, one hundred sixty-seven (4,167) cubic feet per second, and it would be impossible for this defendant, if it had the power, to provide sufficient funds to build such sewage disposal and filtration works, either by taxation or by the issuance of bonds; that neither the City of Chicago nor the other cities, villages or towns within the limits of The Sanitary District of Chicago, have the power to raise sufficient moneys by the sale of bonds or by taxation, by reason of the constitutional limitation aforesaid, to build sewage disposal or water purification and filtration works which would be necessary to be constructed within the limits of the respective cities, towns and villages, if this defendant were compelled to limit the flow of water to four thousand, one hundred and sixty-seven (4,167) cubic feet per second.

45. This defendant states that, if the said injunction is granted, and this defendant is restrained from withdrawing more than four thousand, one hundred sixty-seven (4,167) cubic feet per second from Lake Michigan, it will be unable to keep the drainage water,

which will flow from said territory, from reversing the Chicago [fol. 163] River at various times during each year, so that the said drainage and sewage arising tributary to the Chicago River will flow into Lake Michigan and thereby pollute the water supply of the City of Chicago and other cities, towns and villages within the limits of the Sanitary District; that, at other times of the year, the said Chicago River will become polluted so that there would be thereby created an offensive condition and a public nuisance, increasing the spread of water-borne diseases, endangering the health and lives of the entire population of this defendant and its floating population.

46. This defendant states that the sewage disposal works and water filtration plants that would be made necessary to be constructed if the said injunction were granted and the flow of water through the main channel were limited to four thousand, one hundred and sixty-seven (4,167) cubic feet per second, would be inadequate, ineffective and impracticable to provide for the disposition of the sewage aforesaid and to provide pure drinking water for the inhabitants of the said District; that purification of sewage artificially and the filtration of water polluted by sewage or an effluent arising from sewage purification work is a method for providing a water supply used only where the method provided for under the Act of 1889, to wit: the dilution method and diverting sewage and drainage from the water supply, is impossible.

47. This defendant denies that the complainant is entitled to the relief, or any part thereof, as in the said Bill of Complaint demanded, and this defendant states that said Bill of Complaint is inadequate, and insufficient in law and does not on its face entitle the said complainant to the relief prayed for in and by said Bill of Complaint; and this defendant furthermore moves that the Bill of Complaint be dismissed for want of equity and this defendant, as to [fol. 164] each and every allegation of the said Bill of Complaint not herein admitted, answered or specifically denied hereby expressly denies, and this defendant prays the same advantage of this answer as if it had pleaded or demurred to the said Bill of Complaint and prays that it be dismissed with its reasonable costs and charges, in this behalf most wrongfully sustained.

Edmund D. Adcock, Alfred S. Austrian, Solicitors for Defendant.

[fol. 165]

EXHIBIT A TO ANSWER

An Act to Create Sanitary Districts and to Remove Obstructions in the Desplaines and Illinois Rivers. (Approved May 29th, 1889. In force July 1, 1889, L. 1889, P. 126; Legal News Ed. p. 85.)

343. Incorporating Sanitary District—Question, How Submitted—Commissioners—Report as to Expenditures.

1. That whenever any area of contiguous territory within the limits of a single county shall contain two or more incorporated

cities, towns or villages, and shall be so situated that the maintenance of a common outlet for the drainage thereof will conduce to the preservation of the public health, the same may be incorporated as a sanitary district under this act, in the manner following: Any 5,000 legal voters resident within the limits of such proposed sanitary district may petition the county judge of the county in which they reside to cause the question to be submitted to the legal voters of such proposed district whether they will organize as a sanitary district under this act. Such petition shall be addressed to the county judge, and shall contain a definite description of the territory intended to be embraced in such district, and the name of such proposed sanitary district: Provided, however, that no territory shall be included in any municipal corporation formed hereunder which is not situated within the limits of a city, incorporated town or village, or within three miles thereof, and no territory shall be included within more than one sanitary district under this Act. Upon the filing of such petition in the office of the county clerk of the county in which such territory is situated it shall be the duty of the county judge to call to his assistance two judges of the circuit court and such judges shall constitute a board of commissioners who shall have [fol. 166] power and authority to consider the boundaries of any such proposed sanitary district, whether the same shall be described in such petition or otherwise. Notice shall be given by such county judge of the time and place where such commissioners will meet, by a publication inserted in one or more daily papers published in such county, at least twenty days prior to such meeting. At such meeting the county judge shall preside and all persons in such proposed sanitary district shall have an opportunity to be heard touching the location and boundary of such proposed district and make suggestions regarding the same, and such commissioners, after hearing statements, evidence and suggestions, shall fix and determine the limits and boundaries of such proposed district, and for that purpose and to that extent, may alter and amend such petition. After such determination by said commissioners, or a majority of them, the county judge shall submit to the legal voters of the proposed sanitary district the question of the organization and establishment of the proposed sanitary district, as determined by said commissioners, at an election to be held on the first Tuesday after the first Monday in November thence next ensuing, notice whereof shall be given by said commissioners, at least twenty days prior thereto, by publication in one or more daily papers published within such proposed sanitary district, such notice to specify briefly the purpose of such election, with a description of such proposed district. Each legal voter resident within such proposed sanitary district shall have the right to cast a ballot at such election, with the words thereon "For Sanitary District," or "Against Sanitary District." The ballots so cast shall be received, returned and canvassed in the same manner and by the same officers as is provided by law in the case of ballots cast for county officers. The County judge shall cause a statement of the result of such election to be spread upon the records of the County Court. If a majority of the votes

cast upon the question of the incorporation of the proposed sanitary [fol. 167] district shall be in favor of the proposed sanitary district such proposed district shall thenceforth be deemed an organized sanitary district under this act:* Provided, that the Trustees of all Sanitary Districts heretofore created under this act and all Sanitary Districts hereafter to be created under this act, whenever the expenditures of any such District shall have amounted to the sum of one million dollars and such sum shall have been raised; by taxation upon the assessable property in any such Sanitary District or shall have been raised by the sale of bonds of said district or otherwise, shall on or before September 1, A. D. 1905, report to the Governor of this State and to the two branches of the Legislature thereof separately all of the items of expenditures theretofore made by them as such Trustees, of the moneys so belonging to said Sanitary District, together with all items of receipts from all sources and shall furnish with all such reports copies of all contracts entered into by them for the expenditure of moneys so belonging to said District and upon November 30, A. D. 1906, and biennially thereafter the Trustees of any such District shall make full, complete, accurate and itemized reports of all receipts and expenditures of such moneys to be hereafter made by them respectively, together with a copy of all contracts for the expenditures of moneys hereafter to be made by such Trustees to the Governor and the two branches of the State Legislature of this State separately and the Governor and either branch of the said Legislature of this State shall have the right to examine the books of said Trustees and all Expenditures made by or in any such District, by committee or otherwise, and to call for further reports, accounts, items and copies of all contracts made by or documents held in the possession of any such Trustees; and upon the failure, refusal or neglect of any such Trustees to accurately and completely furnish any and all such items, accounts, documents and reports of contracts as provided in this Act, any and all Trustees of any such [fol. 168] Sanitary District shall forfeit their office and by writ of quo warranto be ousted and removed therefrom; all such actions to be brought in the county where any such Trustees may reside or wherein the major portion of any such Sanitary District may be situated. (That part following the star was added by the Act of 1905 entitled "An Act to amend and revise section 1 of an act entitled, 'An Act to create Sanitary Districts and to remove obstructions in the Desplaines and Illinois Rivers.'" (Approved May 29th, 1889, in force July 1, 1889. Approved May 13, 1905. In force July 1, 1905.)

344. Judicial Notice of District — Organization — Election — County Judge.

2. All courts in this state shall take judicial notice of the existence of all Sanitary Districts organized under this act. Upon the organization of any sanitary district under this act the county judge shall call an election to elect officers and cause notice thereof to be posted or published, and perform all other acts in reference to such election in like manner as nearly as may be, as he is required to perform in

reference to the election of officers in newly organized cities under the provisions of an act entitled "An Act to provide for the incorporation of cities and villages." Approved April 10th, 1872.

345. Trustees—Election and Terms of—Vacancy.

3. In each Sanitary District organized under this act, there shall be elected at the November election 1905, nine trustees, three of which trustees shall hold their office for a term of one year, three for a term of three years, and three for a term of five years, and until their successors shall be elected and qualified.

At every regular county election occurring after the year 1905, there shall be elected three trustees who shall hold their office for six [fol. 169] years, and until their successors shall be elected and qualified, to succeed those whose terms of office shall expire that year. In all elections for trustees each elector may vote for as many candidates as there are trustees to be elected, but no elector may give to such candidates more than one vote, it being the intent and purpose of this act to prohibit cumulative voting in the selection of members of the Board of Trustees of the Sanitary District.

Each elector in such Sanitary District may vote for and designate (upon his ballot cast for Trustees for said Sanitary District) one of the candidates for Trustees to be President of said Board, and the person so designated who shall receive the highest number of such votes shall be declared elected President of such board. The person so elected, President of such Board at the November election of 1905, shall hold office for a term of five years and until his successor shall be elected and qualified. When a vacancy shall occur in the office of president of such board, the board of trustees shall elect one of their number, who shall perform the duties of president until such vacancy shall be filled by an election. When a vacancy shall occur in the office of trustees of any sanitary district organized under the provisions hereof within one year before the expiration of the term of such vacant office, the vacancy shall be filled by appointment by the board of trustees of such sanitary district, but if such unexpired term exceeds one year, the Governor shall appoint the time for an election to fill such vacancy, and shall file a notice of such time with the county clerk of each of the counties in which (such) sanitary district shall be situated.

Such sanitary district shall from the time of the first election held by it under this act be construed in law and equity a body corporate and politic, and by the name and style of the Sanitary District of — and by such name and style may sue and be sued, contract and be contracted with, acquire and hold real estate and personal property necessary for corporate purposes, and adopt a common seal and alter the same at pleasure. (As amended by act approved and in force February 27, 1907. L. 1907, p. 287.

346. Trustees Constitute a Board—Duties and Powers of—Ordinances, etc. (How Approved).

4. The trustees elected in pursuance of the foregoing provisions of this act shall constitute a board of trustees for the district by which

they are elected, which board of trustees is hereby declared to be the corporate authorities of such sanitary district, and shall exercise all the powers and manage and control all the affairs and property of such district. Said board of trustees shall have the right to elect a clerk, treasurer, chief engineer and attorney for such municipality, who shall hold their respective offices during the pleasure of the board, who shall give bond as may be required by said board. Said board may prescribe the duties and fix the compensation of all the officers and employees of said sanitary district: Provided, however, that the salary of the president of said board of trustees who shall be elected at any election held subsequent to the year 1910 shall in no case exceed seven thousand five hundred dollars (\$7,500.00) per annum and the salary of each of the other trustees elected subsequent to the year 1910, shall not exceed five thousand dollars (\$5,000.00) per annum. Any incumbent of the office of trustee (excepting said president) whose term is now running and does not expire until after the passage of this act may appoint a private secretary, and such appointment shall remain in force until revoked by the trustee making the same, and such secretary shall receive a salary at the rate of two thousand dollars (\$2,000.00) per annum, payable monthly. No trustee (excepting the president) shall be entitled to appoint such private secretary during such time as he shall receive the maximum salary herein authorized. Any incumbent of the office of president heretofore or hereafter elected may appoint a private secretary, which secretary shall receive a salary [fol. 171] not to exceed three thousand five hundred (\$3,500.00) dollars per annum, payable monthly. Any such appointment made by the president shall remain in force until revoked by such president or until the expiration of his term of office.

Said board of trustees shall have full power to pass all necessary ordinances, orders, rules, resolutions and regulations for the proper management and conduct of the business of said board of trustees and of said corporation and for carrying into effect the object for which such sanitary district is formed. All ordinances, orders, rules, resolutions and regulations passed by said board of trustees shall, before they take effect, be approved by the president of said board of trustees, and if he shall approve thereof, he shall sign the same, and such as he shall not approve he shall return to the board of trustees with his objections thereto in writing at the next regular meeting of said board of trustees occurring after the passage thereof. Such veto may extend (extend) to any one or more items or appropriations contained in any ordinance making an appropriation, or to the entire ordinance; and in case the veto extends to a part of such ordinance, the residue thereof shall take effect and be in force, but in case the president of such board of trustees shall fail to return any ordinance, order, rule, resolution or regulation with his objections thereto by the time aforesaid, he shall be deemed to have approved the same, and the same shall take effect accordingly. Upon the return of any ordinance, order, rule, resolution or regulation by the president, the vote by which the same was passed shall

be reconsidered by the board of trustees, and if upon such reconsideration two-thirds of all the members elect shall agree by yeas and nays to pass the same it shall go into effect notwithstanding the president may refuse to approve thereof. (As amended by act approved May 27, 1911. In force July 1, 1911. L. 1911, p. 307.)

[fol. 172] 347. Ordinances Making Appropriation—Publication of.

5. All ordinances making any appropriations shall, within one month after they are passed, be published at least once in a newspaper published in such district, or if no such newspaper of general circulation is published therein, by posting copies of the same in three public places in the district; and no such ordinance shall take effect until ten days after it is so published, and all other ordinances, orders and resolutions, shall take effect from and after their passage unless otherwise provided therein.

348. Ordinances and Resolutions—Evidence.

6. All ordinances, orders and resolutions, and the date of publication thereof, may be proven by the certificate of the clerk, under the seal of the corporation, and when printed in book or pamphlet form, and purporting to be published by the board of trustees and such book or pamphlet shall be received as evidence of the passage and legal publication of such ordinances, orders and resolution, as of the dates mentioned in such book, or pamphlet in all courts and places without further proof.

349. Board of Trustees—Powers of.

7. The board of trustees of any sanitary district organized under this act shall have power to provide for the drainage of such district by laying out, establishing, constructing and maintaining one or more main channels, drains, ditches, and outlets for carrying off and disposing of the drainage (including the sewage) of such district, together with such adjuncts and additions thereto as may be necessary or proper to cause such channels or outlets to accomplish the end for which they are designed in a satisfactory manner; also to make and establish docks adjacent to any navigable channel made under the provisions hereof for drainage purposes, and to lease, [fol. 173] manage and control such docks, and also to control and dispose of any water power which may be incidentally created in the construction and use of said channels or outlets, but in no case shall said board have any power to control water after it passes beyond its channel, waterways, races or structures into a river or natural waterway or channel, or water-power or docks situated on such river or natural waterway or channel: Provided, however, nothing in this act shall be construed to abridge or prevent the State from hereafter requiring a portion of the funds derived from such water-power, dockage or wharfage to be paid into the State Treasury to be used for State purposes. Such channels or outlets may extend outside of the territory included within such sanitary dis-

strict and the rights and powers of said board of trustees over the portion of such channel or outlet lying outside of such district shall be the same as those vested in said board over that portion of such channels or outlets within the said district.

350. May Purchase and Sell Real Estate, etc.

8. Such sanitary district may acquire by purchase, condemnation or otherwise any and all real and personal property, right of way and privilege, either within or without its corporate limits, that may be required for its corporate purposes: Provided, all moneys for the purchase and condemnation of any property shall be paid before possession is taken, or any work done on the premises damaged by the construction of such channel or outlet, and in case of an appeal from the court in which such condemnation proceedings shall be pending, taken by either party, whereby the amount of damages is not finally determined, the amount of the judgment in such court shall be deposited with the county treasurer of the county in which such judgment shall be rendered subject to the payment of such damages on orders signed by such judge whenever the amount of damages is finally determined; and when not longer required for such purposes, [fol. 174] to sell, convey, vacate, and release the same, subject to the reservation contained in section 7 relating to water-power and docks. (As amended by act approved May 25, 1907. In force, July 1, 1907; L. 1907; p. 284.)

351. May Borrow Money—Limitation.

9. The corporation may borrow money for corporate purposes, and may issue bonds therefor, but shall not become indebted in any manner, or for any purpose to an amount in the aggregate to exceed three (3) per centum of the valuation of taxable property therein, to be ascertained by the last assessment for State and county taxes previous to incurring of such indebtedness. (As amended by act approved June 14, 1909. In force July 1, 1909. L. 1909, P. 196.)

352. To Provide for Direct Annual Tax—Net Earnings.

10. At the time or before incurring any indebtedness, the board of trustees shall provide for the collection of a direct annual tax sufficient to pay the interest on such debt as it falls due, and also to pay and discharge the principal thereof as the same shall fall due, and at least within twenty years from the time of contracting the same: Provided, that the net earnings from water-power and docks may be appropriated and applied to the purpose of paying the interest or principal of such indebtedness, or both, and to the extent that they will suffice, the direct tax may be remitted.

353. Contracts—How Let.

11. All contracts for work to be done by such municipality, the expense of which will exceed five hundred dollars, shall be let to the lowest responsible bidder therefor upon not less than ten days' public notice of the terms and conditions upon which the contract is to be

let having been given by publication in a newspaper of general circulation published in said district, and the said board shall have the [fol. 175] power and authority to reject any and all bids and readvertise: Provided, no person shall be employed on said work unless he be a citizen of the United States, or has in good faith declared his intention to become such citizen. In all cases where an alien, after filing his declaration of intention to become a citizen of the United States, shall for the space of three months after he could lawfully do so, fail to take out his final papers and complete his citizenship, such failure shall be prima facie evidence that his declaration of intentions was not made in good faith. And that eight hours shall constitute a day's work. (As amended by act approved May 25, 1907. In force July 1, 1907. L. 1907, p. 284.)

354. Trustees—Levy and Collect Taxes—Movable Bridges.

12. The board of trustees may levy and collect taxes for corporate purposes upon property within the territorial limits of such sanitary district, the aggregate amount of which in any one year shall not exceed one per centum of the value of the taxable property within the corporate limits as the same shall be assessed and equalized for the county taxes for the year in which the levy is made. Said board shall cause the amount to be raised by taxation in each year, to be certified to the county clerk on or before the second Tuesday in August as provided in section one hundred and twenty-two of the general revenue law. All taxes so levied and certified shall be collected and enforced in the same manner and by the same officers as state and county taxes, and shall be paid over by the officer collecting the same to the treasurer of the sanitary district, in the manner and at the time provided by the general revenue law: Provided, that no part of the taxes hereby authorized shall be used by such drainage district for the construction of permanent fixed, immovable bridges across any channel constructed under the provisions of this act; And provided further, that all bridges built across such channel shall not necessarily interfere with or obstruct the navigation of such channel. [fol. 176] when the same becomes a navigable stream, as provided in section 24 of this act, but such bridges shall be so constructed that they can be raised, swung, or moved out of the way of vessels, tugs, boats, or other water craft navigating such channel; And provided further that nothing in this act shall be so construed as to compel said district to maintain or operate said bridges, as movable bridges, for a period of nine years from and after the time when the water has been turned into said channel pursuant to law, unless the needs of general navigation on the Des Plaines and Illinois rivers, when connected by said channel, sooner require it. (As amended by act approved May 25, 1907. In force July 1, 1907. L. 1907, p. 284.)

355. Expenses of Improvement—Special Assessments—General Tax.

13. The board of trustees shall have power to defray the expenses of any improvement made by it in the execution of the powers

hereby granted to such incorporation, by special assessment or by general taxation, or partly by special assessment and partly by general taxation, as they shall by ordinance prescribe. It shall constitute no objection to any special assessment; that the improvement for which the same is levied is partly outside the limits of such incorporation, but no special assessment shall be made upon property situated outside of such sanitary district, and in no case shall any property be assessed more than it will be benefited by the improvement for which the assessment is levied. The proceedings for making, levying, collecting and enforcing of any special assessment levied hereunder, shall be the same as nearly as may be as is prescribed by article nine of an act entitled "An act to provide for the incorporation of cities and villages," approved April 10, 1872. Whenever in said act the words "city council" are used, the same shall apply to the board of trustees constituted by this act, and the words applying to the city or its officers in that article shall be held [fol. 177] to apply to the corporation hereby created and to its officers.

356. Assessment—Installments—Interest.

14. When any assessment is made under this act, the ordinance authorizing such assessment may provide that it be divided into equal annual installments, not more than twenty in number, and fix the amount and time of payment of each installment, and that the installments shall bear interest at a rate not exceeding six per cent per annum, payable annually, from the date fixed in said ordinance, and the several installments and interests thereon may be collected and enforced, as they shall become due, in the manner provided for the enforcement of assessments under said Article 9. No more of any assessment need be returned or certified to the county collector than will show the amount due and unpaid at the time of such return, and no sale of any parcel of land for any installment of an assessment shall discharge the premises from any subsequent installment of the same or any other assessment. Any one or all of the installments may be paid any time after the assessment is confirmed, with accrued interest, if any, to the date of payment.

357. When Assessments Payable by Installments—Bonds May Be Issued.

15. Where any assessment is made payable in installments the board of trustees may issue bonds or certificates not exceeding in amount eighty per centum of the unpaid portion of such assessment at the date of the issue thereof, payable only out of such assessment, and bearing interest at a rate not exceeding the rate of interest upon the installments of such assessments. The board of trustees shall have the right to call in and pay off said bonds or certificates as fast as there is money received into the treasury from the assessment against which the same are issued, and all moneys received upon [fol. 178] such assessment shall be applied to the payment of said certificates or bonds until they are fully satisfied.

358. Private Property—How Taken for Improvement.

16. Whenever the board of trustees of any sanitary district shall pass an ordinance for the making of any improvement which such district is authorized to make, the making of which will require that private property should be taken or damaged, such district may cause compensation therefor to be ascertained, and condemn and acquire possession thereof in the same manner as nearly as may be as is provided in an act entitled "An act to provide for the exercise of the right of eminent domain," approved April 10, 1872: Provided, however, that proceedings to ascertain the compensation to be paid for taking or damaging private property shall in all cases, be instituted in the county where the property sought to be taken or damaged is situated; And, provided, that all damages to property whether determined by agreement or by final judgment of court shall be paid out of the annual district tax, prior to the payment of any other debt or obligation.

359. May Acquire Right of Way.

17. When it shall be necessary in making any improvements which any district is authorized by this act to make, to enter upon any public property or property held for public use, such district shall have the power so to do and may acquire the necessary right of way over such property held for public use in the same manner as is above provided for acquiring private property, and may enter upon, use, widen, deepen and improve any navigable or other waters, waterways, canal or lake: Provided, the public use thereof shall not be unnecessarily interrupted or interfered with, and that the same shall be restored to its former usefulness as soon as practicable: Provided, however, that no such district shall occupy any portion of [fol. 179] the Illinois and Michigan canal outside of the limits of the county in which such district is situated for the site of any such improvement, except to cross the same, and then only in such a way as not to impair the usefulness of said canal, or to the injury of the right of the State therein, and only under the direction and supervision of the canal commissioners: And, provided further, that no district shall be required to make any compensation for the use of so much of said canal as lies within the limits of the county in which said district is situated except for transportation purposes.

360. Special Assessment—Damage to Property and Cost of Acquiring.

18. In making any special assessment for any improvement which requires the taking or damaging of property, the cost of acquiring the right to damage or take such property may be estimated and included in the assessment as a part of the cost of making such improvement.

361. Liability of Sanitary District for Damages.

19. Every sanitary district shall be liable for all damages to real estate within or without such district which shall be overflowed or

otherwise damaged by reason of the construction, enlargement or use of any channel, ditch, drain, outlet or other improvement under the provisions of this act; and actions to recover such damages may be brought in the county where such real estate is situated, or in the county where such sanitary district is located, at the option of the party claiming to be injured. And in case judgment is rendered against such district for damage, the plaintiff shall also recover his reasonable attorneys' fees to be taxed as costs of suit: Provided, however, it shall appear on the hearing of plaintiff's motion to tax such attorney's fees, that the plaintiff notified the trustees of such district, in writing, at least 60 days before suit was commenced by leaving a copy of such notice with some one of the trustees of such [fol. 180] district, stating that he claims damages to the amount of — dollars by reason of (here insert the cause of damage) and intends to sue for the same: And, provided further, that the amount recovered shall be larger than the amount offered by said trustees (if anything) as a compromise for damages sustained. (As amended by act approved May 25, 1907. In force July 1, 1907. L. 1907. p. 284.)

361a. Inhabitant May Be Competent as Judge, Justice, or Juror.

19a. No person shall be an incompetent judge, justice or juror by reason of his being an inhabitant or freeholder in any sanitary district formed under the provisions hereof in any action in which such sanitary district may be a party in interest. (Added by act approved May 25, 1907. In force July 1, 1907. L. 1907, p. 284.)

362. Capacity of Channel or Outlet.

20. Any channel or outlet constructed under the provisions of this act which shall cause the discharge of sewage into or through any river or stream of water beyond or without the limits of the district constructing the same shall be of sufficient size and capacity to produce a continuous flow of water of at least two hundred cubic feet per minute for each one thousand of the population of the district drained thereby, and the same shall be kept and maintained of such size and in such condition that the water thereof shall be neither offensive or injurious to the health of any of the people of this State; and before any sewage shall be discharged into such channel or outlet, all garbage, dead animals and parts thereof, and other solids shall be taken therefrom, and said district shall, at the time any sewage is turned into or through any such channel or channels, turn into said channel or channels not less than twenty thousand cubic feet of water per minute for every one hundred [fol. 181] thousand inhabitants of said district, and shall thereafter maintain the flow of such quantity of water. (As amended by Act which became a law June 10, 1895. In force July 1, 1895: L. 1895. p. 168; Legal News Ed. p. 81.)

363. Sanitary District—Failure to Comply with Act—Remedy Penalty—Emergency Tax.

21. In case any sanitary district in this State formed under the provisions of this act shall introduce sewage into any river or stream of water, or natural or artificial water course, beyond or without the limits of such district, without conforming to the provisions of this act, or having introduced such sewage into such water course, shall fail to comply with any of the provisions of this act, an action to enforce compliance shall be brought by the Attorney General of this State in the courts of any county wherein such water course is situated, or he may authorize the State's Attorney of any such county to commence and prosecute such action in any such county: Provided, that nothing in this section contained shall be construed to prevent the prosecution of any action or proceedings by individuals or bodies corporate or politic against such district: And, provided further, that if any individual or the authorities of any municipal corporation shall file with the Attorney General a verified statement, in writing, setting forth wherein said sanitary district has failed to comply with any of the provisions of this act, it shall be the duty of the Attorney General forthwith to file in the Supreme Court of this State a petition for mandamus, setting forth wherein said sanitary district has failed to comply with the provisions of this act, and said court shall thereupon hear and determine such cause and proceed to enforce compliance with the provisions of this act, as in other cases of mandamus.

And, in order to comply with the provisions of this act, such sanitary district is hereby authorized and empowered to levy and collect such tax, as an emergency tax, upon the taxable property [fol. 182] of such sanitary district as may be necessary to carry into effect any order, judgment or decree of said court relating to the requisite flowage of water, capacity of the channel or outlet and the construction, maintenance and operation of movable bridges, as required by this act. (As amended by act approved May 15, 1897. In force July 1, 1897; L. 1897 p. 210; Legal News Ed. p. 76.)

364. Act—How Construed.

22. Nothing in this act contained shall be so construed as to constitute a contract or grant between the State of Illinois and any sanitary district formed under its provisions, or to prevent, debar or deprive the State of Illinois from, at any time in the future, altering, amending or repealing this act, or imposing any conditions, restrictions or requirements other, different or additional to any herein contained upon any sanitary district which may be formed hereunder.

365. Channel—How to Be Constructed.

23. If any channel is constructed under the provisions hereof by means of which any of the waters of Lake Michigan shall be caused to pass into the Desplaines or Illinois river such channel shall be

constructed of sufficient size and capacity to produce and maintain at all times a continuous flow of not less than 300,000 cubic feet of water per minute, and to be of a depth of not less than fourteen feet, and a current not exceeding three miles per hour, and if any portion of any such channel shall be cut through a territory with a rocky stratum where such rocky stratum is above a grade sufficient to produce a depth of water from Lake Michigan, of not less than eighteen feet, such portion of said channel shall have double the flowing capacity above provided for, and a width of not less than one hundred and sixty feet at the bottom capable of producing a depth of not less than eighteen feet of water. If the population of [fol. 183] the district draining into such channel shall at any time exceed 1,500,000 such channel shall be made and kept of such size and in such condition that it will produce and maintain at all times a continuous flow of not less than 20,000 cubic feet of water per minute for each 100,000 of the population of such district, at a current of not more than three miles per hour, and if at any time the general government shall improve the Desplaines or Illinois rivers, so that the same shall be capable of receiving a flow of 600,000 cubic feet of water per minute, or more, from said channel, and shall provide for the payment of all damages which any extra flow above 300,000 cubic feet of water per minute from such channel may cause to private property so as to save harmless the said district from all liability therefrom, then such sanitary district shall within one year thereafter, enlarge the entire channel leading into said Desplaines or Illinois rivers from said district to a sufficient size and capacity to produce and maintain a continuous flow throughout the same of not less than 600,000 cubic feet of water per minute with a current of not more than three miles per hour, and such channel shall be constructed upon such grade as to be capable of producing a depth of water not less than eighteen feet throughout said channel, and shall have a width of not less than one hundred and sixty feet at the bottom. In case a channel is constructed to the Desplaines river as contemplated in this section it shall be carried down the slope between Lockport and Joliet to the pool commonly known as the upper basin of sufficient width and depth to carry off the water the channel shall bring down from above. The district constructing a channel to carry water from Lake Michigan of any amount authorized by this act, may correct, modify and remove obstructions in the Desplaines and Illinois rivers wherever it shall be necessary so to do to prevent overflow or damage along said river, and shall remove the dams at Henry and Copperas Creek in the Illinois river, be- [fol. 184] fore any water shall be turned into the said channel. And the canal commissioners, if they shall find at any time that an additional supply of water has been added to either of said rivers, by any drainage district or districts, to maintain a depth of not less than six feet from any dam owned by the State, to and into the first lock of the Illinois and Michigan Canal at La Salle, without the aid of any such dam, at low water, then it shall be the duty of said canal commissioners to cause such dam or dams to be removed. This act

shall not be construed to authorize the injury or destruction of existing water power rights. (Canal Comrs. v. Sanitary District, 184 Ill. 597.)

366. Channel, When Completed—Control of.

24. When such channel shall be completed, and the water turned therein, to the amount of three hundred thousand cubic feet of water per minute, the same is hereby declared a navigable stream, and whenever the general government shall improve the Desplaines and Illinois rivers for navigation, to connect with this channel, said general government shall have full control over the same for navigation purposes, but not to interfere with its control for sanitary or drainage purposes.

367. May Permit Territories Outside to Drain, etc.

25. Any district formed hereunder shall have the right to permit territory lying outside its limits and within the same county to drain into and use any channel or drain made by it, upon such payments, terms and conditions as may be mutually agreed upon, and any district formed hereunder is hereby given full power and authority to contract for the right to use any drain or channel which may be made by any other sanitary district, upon such terms as may be mutually agreed upon, and to raise the money called for by any such contract in the same way and to the same extent as such district is authorized to raise money for any other corporate purposes: Provided, that where the united flow of any sanitary districts thus co-operating shall pass into any channel constructed within the limits of the county wherein such districts are located, and which passes into the Desplaines or Illinois rivers, such united flow shall in no case and at no time be less than 20,000 cubic feet of water per minute for each one hundred thousand of the aggregate of the population of the districts co-operating: Provided, nothing in this act shall in any wise be so construed as to diminish, impair or remove any right or rights of any city, village, township or corporation, body politic or individual situated on the Desplaines or Illinois rivers or their tributaries and within the valleys of the same to use the channel for drainage or otherwise not inconsistent with the rights of the district constructing the same as expressed in this act.

368. When City or Village Owns Waterworks, etc.

26. Whenever in any such sanitary district there shall be a city, incorporated town or village, which owns a system of waterworks and supplies water from a lake or other source which will be saved and preserved from sewage pollution, by the construction of the main channel, drain, ditch or outlet herein provided for, and the turning of the sewage of such city and district therein, and there shall be in such sanitary district any territory bordering on any such city, incorporated town or village within the limits of another city, incorporated town or village, which does not own any system of waterworks, at the time of the creation of such sanitary district, then

upon application by the corporate authorities of such latter named city, incorporated town or village the corporate authorities of such city, incorporated town or village having such system of water-works shall furnish water at the boundary line between such municipalities by means of its waterworks to the corporate authorities asking for the same in such quantities as may be required to supply [fol. 186] consumers within said territory, at no greater price or charge than it charges and collects of consumers, within its limits for water furnished through meters in like large quantities.

369. When Channel Constructed—Commissioners to be appointed to inspect its work.

27. If any channel shall be constructed under the provisions of section 23 of this act, it shall be the duty of the trustees of such district, when such channel shall be completed, and before any water or sewage shall be admitted therein, to duly notify, in writing, the Governor of this State of such fact; and the Governor shall thereupon appoint three discreet persons as commissioners, one of whom shall be a resident of the city of Joliet, or between said city and the city of La Salle, and one a resident of the city of La Salle, or between said city and the city of Peoria, and one a resident of the city of Peoria, or between said city and the mouth of the Illinois river, to inspect said work. The said commissioners shall, within ten days after such appointment meet at the city of Chicago, and shall appoint a competent civil engineer, and they may employ such other assistance as they may require to expeditiously perform their duties. The said commission shall take as their datum line for the survey the datum established by the Illinois and Michigan Canal Trustees in 1847, and shall make such examination and surveys of Chicago river and of the channel or channels authorized by this act as shall enable them to ascertain whether said channel is of the character and capacity required by this act. And in case they shall find the work in all respects in accordance with the provisions of section 23, of this act, they shall so certify to the Governor, who shall thereupon authorize the water and sewage to be let into said channel. But in case said commissioners shall find said channel is not constructed in accordance with the provisions of this act, it shall be their [fol. 187] duty to file in any court of competent jurisdiction, on the chancery side thereof, in their name as such commissioners, a bill against said corporation, which bill shall set forth wherein said work is deficient and fails to comply with the provisions of this act; and said court shall thereupon issue an injunction without bond against said defendant, enjoining and restraining it from admitting water or sewage into said channel until the final order of the court. And in case said court, upon hearing, shall determine that said channel is not constructed in accordance with the provisions of this act, said injunction shall be continued until the provisions of this act shall have been fully complied with.

Such commissioners and engineers shall receive for their services ten dollars per day each, and their reasonable expenses and outlays for the time by them necessarily employed in the discharge of their

duties, which shall be paid to them from the State Treasury; and the said sanitary district shall reimburse the State for all expenses and disbursements on account of said commission.

If any channel is constructed under the provisions of this act which shall discharge the sewage of a population of more than 300,000 into or through any river beyond or without the limits of the district constructing it, the same shall be constructed in accordance with the provisions of section 23 of this act, and if any such channel receives its supply of water from any river or channel connecting with Lake Michigan it shall be construed as receiving its supply of waters from Lake Michigan.

An Act Concerning Police Power upon the Sanitary District of Chicago. (Approved June 16, 1893. In Force July 1, 1893. L. 1893, p. 96; Legal News Ed., p. 56.)

369a. Power to Appoint Force.

1. Be it enacted by the People of the State of Illinois, represented in the General Assembly, That the sanitary district of Chicago shall [fol. 188] have the right and power to appoint and support a police force, the members of which may have and exercise police powers over and within its right of way and for a distance of one and one-half miles on each side of its main drainage channel, such police powers as are conferred upon and exercised by the police of organized cities and villages; but such police force when acting within the limits of such city or village, shall act in aid of the regular police force of such city or village, and shall then be subject to the direction of its chief of police, city or village marshals or other head thereof.

An Act extending the powers of sanitary districts organized under an act entitled "An act to create sanitary district and to remove obstructions in the Desplaines and Illinois rivers," approved May 29, 1889, in force July 1, 1889, to enable such districts to improve certain navigable streams within or auxiliary to such district and to build bridges across such streams. (Approved May 13, 1901. In force July 1, 1901. L. 1901, p. 164; Legal News Ed., p. 94.)

369b. May Acquire Land, etc., by Purchase or under the Eminent Domain Laws.

1. Be it enacted by the People of the State of Illinois represented in the General Assembly: That any Sanitary district organized under an act entitled "An act to create Sanitary Districts and remove obstructions in the Des Plaines and Illinois rivers," approved May 29, 1889, in force July 1, 1889, which heretofore has or may hereafter use any navigable stream or river for a portion of its channel, or as an adjunct thereto or auxiliary to its main channel, may for the purpose of widening, deepening or improving the same, for purposes set forth in the act aforesaid, acquire by purchase, or under and pursuant to the eminent domain laws of this state, or otherwise,

sufficient land for the purpose of making such improvements by [fol. 189] widening and deepening said stream, as aforesaid.

369c. When District May Construct Bridge or Bridges.

2. That wherever it has or may become necessary by reason of the widening, deepening or improving of such river, to construct bridges to meet the altered or changed condition of such stream or river, such Sanitary District or districts may construct such bridge, or bridges as such improvement, heretofore made or hereafter to be made, may require.

369 D. Act, How Construed.

3. Nothing herein contained shall be construed as depriving any city, village or town, situated wholly or partly within the limits of said Sanitary District, of any power now exercised in the operation of said bridges; and any bridges built under the provisions of this act to supply or replace a public street or highway bridge, now or hereafter existing, shall, after the construction of said bridge, be operated and controlled for municipal purposes by said city, village or town within which it is located.

An act in relation to the Sanitary District of Chicago to enlarge the corporate limits of said district and to provide for the navigation of the channels created by such district and to construct dams, water-wheels and other works necessary to develop and render available the power arising from the water passing through its channels and to levy taxes therefor. (Approved May 14, 1903; in force July 1, 1903, L. 1903, p. 113; Legal News Ed., p. 92.)

369 E. Sanitary District of Chicago Extended.

1. Be it enacted by the people of the State of Illinois represented in the General Assembly: That the corporate limits of the sanitary district of Chicago, be, and the same are hereby extended so as to [fol. 190] embrace and include within the same, the territory and tracts of land situated in the County of Cook and State of Illinois, hereinafter described as follows, viz.:

First. The territory or tract of land bounded as follows: Beginning at the intersection of the county line between Lake and Cook counties, State of Illinois, with the west shore of Lake Michigan, running thence west along said county line to the northwest corner of Section three (3) Township forty-two (42) north, Range twelve (12), east of the third principal meridian; thence south to the southeast corner of Section thirty-three (33), Township forty-two (42) north, Range twelve (12) east of the third principal meridian; thence east to the northwest corner of section twelve (12) Township forty-one (41) north, Range twelve (12) east of the third principal meridian; thence south to the northwest corner of Section twenty-five (25), in said town and range; thence east to the northeast corner of the west half ($\frac{1}{2}$) of the west half ($\frac{1}{2}$) of said Section (twenty-five) 25; thence south to the southeast corner of the west half ($\frac{1}{2}$)

of the west half ($\frac{1}{2}$) of Section thirty-six (36) in said town and range; thence east to the northeast corner of the west half ($\frac{1}{2}$) of Section one (1), Township forty (40) north, Range twelve (12), east of the third principal meridian; thence south to the southeast corner of the west half ($\frac{1}{2}$) of Section thirteen (13) in said township and range; thence east to the southeast corner of Section thirteen (13) thence east, north, northwest and east along the present boundary line of said sanitary district of Chicago to the shore of Lake Michigan; thence northwesterly along the shore of Lake Michigan to the place of beginning. ,

Second. The territory or tract of land bounded as follows to-wit: Commencing at the northeast corner of Section three (3) in Township thirty-seven (37) north, Range thirteen (13) east of the third principal meridian; running thence south to the southwest corner [fol. 191] of section eleven (11), township thirty-six (36) north, range thirteen (13) east of the third principal meridian; thence east and south along the boundary lines of Section fourteen (14) in said Township thirty-six (36) to the southeast corner of said Section fourteen (14), thence east to the southeast corner of Section seventeen (17) in Township thirty-six (36) north, Range fifteen (15), east of the third principal meridian; thence north along the east boundary line of the State of Illinois to its intersection with the shore of Lake Michigan, thence along the shore of Lake Michigan to the south boundary line of the present sanitary district of Chicago; thence west along the present south boundary line of the said sanitary district of Chicago to the place of beginning.

369 F. Drainage of Added Territory—Use Calumet Feeder—Illinois and Michigan Canal—Connection with Land for Use of Canal Commissioners.

2. The board of trustees of said sanitary district shall have the right to provide for the drainage of the additional territory added to said sanitary district by this act by laying out, establishing, constructing and maintaining one or more channels, drains, ditches and outlets for carrying off and depositing of the drainage (including the sewage) of such district, together with such adjuncts and additions thereto as may be necessary or proper to cause such channels or outlets to accomplish the end for which they are designed in a satisfactory manner and shall have the right to use what is known as the "Calumet feeder" of the Illinois and Michigan canal and lands adjacent to such feeder belonging to the State of Illinois for the site of any such channel, within the limits of the county in which such district is situated, in such manner as said district may elect, and shall also have the right to construct a channel across said Illinois and Michigan canal, without being required to restore said Illinois and Michigan canal or said feeder to its former usefulness. If, [fol. 192] by reason of said abandonment, a stagnant stream or pool of water shall remain upon the deposits of Chicago sewage, accumulated in said Illinois and Michigan Canal by reason of its years of usefulness by the city of Chicago as a sewage outlet, said

sanitary district shall fill up said canal to a depth sufficient to remove said condition and prevent the spread of pestilence and disease throughout the territory in which said Illinois and Michigan Canal is abandoned; and the other powers and jurisdiction of said sanitary district of Chicago over and in connection with such added territory shall be the same as that vested in it over the territory included within the limits of said sanitary district as originally organized. Before said Calumet channel is connected with the present main sanitary channel, gates of suitable pattern for shutting off the flow of water into said Calumet channel shall be installed at or near the connection of said Calumet channel with the Calumet river and forever maintained for use in case of an emergency, and for the protection of the property and lives of residents of the Illinois valley, and shall maintain the same proportion of dilution of sewage through such auxilliary channels as it may construct and join to its main channel as is now required by the act creating said sanitary district: Provided however, that before any such channel is constructed across said Illinois and Michigan Canal, or the navigation of said canal in any manner interfered with, said sanitary district of Chicago shall connect its present main channel from the controlling works at Lockport with the upper basin of the Illinois and Michigan Canal at Joliet by a channel of a depth of not less than ten (10) feet and a width of not less than one hundred and sixty (160) feet through its entire length, in which channel so to be constructed said sanitary district shall provide and construct a lock or locks of the size of at least twenty-two (22) feet in width by one hundred and thirty (130) feet in length between mitre sills, connecting upper [fol. 193] and lower levels, and provide suitable protection for water craft in using said locks and channel. Said locks shall be constructed of the most approved pattern of their size, and be perfectly safe for use and be equipped with machinery to operate the same; and if only one lock is constructed it shall be provided with double gates to prevent accident, and said sanitary district shall forever maintain and operate the same. Provided, further, that said sanitary district shall furnish and provide at said lock a site of the dimensions of at least twenty by thirty feet upon which the State through the Canal Commissioners shall have the right to erect a suitable office building and keep an agent therein, and the Canal Commissioners shall have such authority in and about said lock as is necessary to enforce the rules and regulations prescribed by them pertaining to and governing navigation on the Illinois and Michigan Canal: Provided, further: That said sanitary district shall furnish, free of all expense, for the perpetual use of the Canal Commissioners, at some point in the township of Lockport to be agreed upon by the Canal Commissioners and the sanitary district trustees, a strip or parcel of land bordering upon said sanitary channel, eight hundred (800) feet in length and one hundred and thirty (130) feet in width, filling the same to a suitable depth to provide suitable roadways for approaches, whereon may be located, constructed and operated docks, shops, barns and other buildings controlled by the Canal Commis-

sioners and used in connection with the operation of the Illinois and Michigan Canal.

369 G. Navigation on Sanitary District Channels.

3. Said sanitary district shall permit all water craft navigating or proposing to navigate said Illinois and Michigan Canal to navigate the water of all said channels of said sanitary district promptly, without delay and without payment of any tolls or lockage charges for so navigating in said channels. The rules of the United States government now in force, regulating navigation on the Chicago [fol. 194] river shall govern navigation on the channels of said sanitary district of Chicago; Provided however, that the speed of all vessels while passing through the earth sections shall not exceed eight (8) miles per hour.

369 H. No Special Tax or Assessment for Work Heretofore Done on Main Channel Added Territory.

4. Said sanitary district of Chicago, shall have no power to levy and collect any special assessment or special tax upon any part of said added territory to defray or pay any part of the cost, either of the work heretofore done by said sanitary district or any main channel hereafter to be constructed in said added territory.

369 I. Authority to Develop Water Power.

5. That the said sanitary district of Chicago is hereby authorized to construct all such dams, waterwheels and other works north of the upper basin of the Illinois and Michigan Canal as may be necessary or appropriate to develop and render available the power arising from the water passing through its main channel and any auxiliary channels now or hereafter constructed by said district.

369 J. How Such Power May Be Utilized.

6. That the power made available by the works constructed under the provisions of this act shall be converted into electrical energy and shall be transmitted to the various cities, villages and towns within said sanitary district or adjacent to the main channel of said sanitary district and may be used in the lighting of said cities, villages and towns, or parts thereof, or for the operation of pumping plants or machinery used for municipal purposes or for public service, or may be disposed of to any other person or corporation, upon such terms and conditions as may be agreed to by the said sanitary district; Provided, however, that it shall be the duty [fol. 195] of said sanitary district to utilize so much of said power as may be required for that purpose to operate the pumping stations, bridges and other machinery of said sanitary district.

369 K. Authority to Levy Tax.

7. That for the purpose of meeting the expenditures arising from the exercise of the powers conferred by sections five and six of this act upon the said sanitary district, the said sanitary district of Chi-

ago is hereby authorized to levy and collect in each year, for a period of three years (in addition to the taxes which said district is now by law authorized to levy and collect) a tax of not exceeding one-fourth of one per cent of the value of the taxable property within the corporate limits of said district, as the same shall be assessed and equalized for the State and county taxes of the year in which the levy is made; Provided, further, that the county clerk, in extending said one-fourth of one per cent tax upon the taxable property within said sanitary district, shall not in any event reduce the same, but in that respect said one-fourth of one per cent shall not be subject to the provisions of an act entitled, "An act concerning the levy and extension of taxes," approved May 9, 1901.

369 L. Comply with Acts of Congress as to Illinois and Michigan Canal.

8. The said sanitary district shall at the expense of said district, in all respects comply with the provisions of the acts of Congress of March 22, 1822, and March 2, 1827, as construed by the courts of last resort of the State of Illinois and of the United States, in relation to the Illinois and Michigan Canal, so far as it affects that portion of the Illinois and Michigan Canal vacated or abandoned by the terms of this act.

[fol. 196] 369 M. Petition for Question to be Submitted—Election.

9. If within sixty (60) days after the passage of this act a petition signed by not less than three per cent of the legal voters of the territory within the limits of the sanitary district of Chicago, as the same are enlarged by the terms of this act, praying that the question of the adoption of this act shall be submitted to a vote of the electors of the territory within the said limits of the said sanitary district of Chicago, shall be filed with the clerk of said sanitary district, then and in such case the question of the adoption of this act shall be submitted to a vote of the said electors as in said petition prayed, at the general election to be held in the County of Cook in November 1904, and in such case this act shall not be in force unless a majority of the votes cast at said election upon the question of the adoption of this act shall be in favor of the adoption thereof. It shall be the duty of the election officers having charge of the preparation of the ballots and the giving of the notices of election and of the counting, canvassing and making return of the ballots to take all necessary steps and do all necessary acts to cause the said question of the adoption of this act to be submitted to a vote as hereinbefore provided, and to cause the result of such election to be canvassed and certified, as provided by law in other similar cases.

(Here follows Exhibit B to answer, marked side folio page 197.)

[fol. 198]

EXHIBIT "C" TO ANSWER

War Department, Washington

March 14, 1907.

In the Matter of the Application of THE SANITARY DISTRICT OF CHICAGO to Reverse the Flow of the Calumet River

This application is made under Section 10 of the act of March 3, 1899 (30 Stat. L., 1151), which provides as follows:

"Sec. 10. That the creation of any obstruction, not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is hereby prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of War; and it shall not be lawful to excavate or fill or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead; haven, harbor, canal, lake, harbor of refuge, or inclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to beginning the same."

The application of the Sanitary District is for leave to reverse the flow in the Calumet River in such a way as to make the water to flow out of the lake instead of to flow into it and to discharge the water from the Calumet River into the Drainage Canal. The Chief of Engineers was at first of opinion that such a change in the flow of the river *it* was not within the power of the Chief of Engineers to recommend, or within the power of the Secretary of War to permit. This expression of opinion as to the construction of the statute [fol. 199] was submitted to the Judge Advocate General, who holds that Section 10, as quoted above, applies to this case and that it is one in which work could be allowed under the recommendation of the Chief of Engineers and the permission of the Secretary of War. Upon the construction of the Judge Advocate General I requested the Chief of Engineers to make his recommendation, which he has done as follows:

"February 23, 1907.

1. Respectfully returned to the Secretary of War.
2. The subject of the abstraction of water from Lake Michigan has been elaborately investigated by the Lake Survey Office at Detroit, and the results are published in the annual reports of the Chief

of Engineers for the years 1900, 1902 and 1904. The international Waterways Commission has also given it careful consideration, and its conclusions are set forth in report of January 4, 1907, printed as War Department Document No. 293.

3. In my opinion, this abstraction will undoubtedly lower the levels of all the waters of the Great Lakes, except those of Lake Superior, and thus diminish the navigable capacity and depth of the various channels and harbors which have been deepened and improved under authority of Congress.

4. Leaving out Lake Superior, there are more than 100 works of river and harbor improvements on the Great Lakes and their connecting waters, for which appropriations aggregating more than \$80,000,000 have been made. The application of this vast sum has resulted in securing and maintaining specified depths and widths of channel, which Congress has decided to be required for the accommodation of the traffic using those waters.

5. To diminish these depths even to a slight extent, would not only prove a serious injury to the traffic, but would practically undo the work which has been accomplished by Congressional direction, and necessitate the expenditure of further large sums of money for restoration. Any project that tends, in a measure, to annul or reverse the orders of Congress, as expressed in the various river and harbor acts appropriating funds for improving the harbors and [fol. 200] channels connecting with the Great Lakes, should meet the disfavor of the Department, unless it has been sanctioned by that body. In my judgment, such a project is the one under consideration, and for this reason I am unwilling to recommend favorable action thereon, assuming that the Department is empowered to take such action, as is held by the Judge Advocate General.

A. Mackenzie, Brig. Gen., Chief of Engineers, U. S. Army."

It is quite evident from the reading of the statute that Congress intended in this statute, as in many others, to give the Chief of Engineers authority, independent of the Secretary of War, in reaching a conclusion as to the wisdom and propriety of granting a permit under the section, and that unless the Chief of Engineers shall recommend the granting of the permit, the Secretary of War is without power to give the requested authority. It follows, therefore, that the application must be denied whatever my view of the case.

The decision of the Chief of Engineers and its final character has made it unnecessary for me to consider the merits of the question, but I may say this much, that the application for a change in the Calumet River is to be made the basis for the withdrawal of a large amount of water from Lake Michigan and that all interested in the enormous lake traffic view the settlement of the question with grave apprehension. Added to this, is the international complication which is likely to arise in the threatened lowering of the lake level in the ports and harbors and canals of Canada. On the other hand, it is maintained with great emphasis and elaboration of detail

that the change in the Calumet River, is essential to the healthful sanitation of Chicago, and that the threatened injury to navigation is so small as to be negligible.

Between too such great interests, the decision must be affected more or less by large public policy and expediency, and while I [fol. 201] agree in the construction of the Judge Advocate General that the issue is left by statutes to the recommendation of the Chief of Engineers and the concurrent decision of the Secretary of War, it may be fortunate that circumstances now require submission of this question of capital and national importance to the Congress of the United States.

Wm. H. Taft, Secretary of War.

(Reprinted from proceedings of Board of Trustees, March 27, 1907, pages 211-12.)

[fol. 202]

EXHIBIT "D" TO ANSWER

"War Department,
Washington, September 11, 1907.

SIR: Referring to your letter of 2nd instant, in which you request approval of proposed drainage channel to connect Lake Michigan at Wilmette, Ill., with the North Branch of the Chicago River; also permission to construct a pile crib in Lake Michigan at mouth of same, and to deposit filling within the limits of such crib, I beg to inform you that the War Department will interpose no objection to the project as set forth in your letter and indicated on drawing submitted, provided the following conditions are complied with:

1. That the pier constructions, the filling behind the same, and the excavation of the proposed channel shall be done subject to the supervision and approval of the local officer of the Corps of Engineers, U. S. Army, at Chicago, so far as to see that the work authorized is not exceeded;
2. That the total diversion of water from Lake Michigan through the Chicago River into the Illinois River shall be no greater than already authorized by past War department permits;
3. That the work shall be commenced before December 31, 1908, and completed within five years thereafter.

Very respectfully, Robert Shaw Oliver, Acting Secretary of War. G. M. Wisner, Esq., Chief Engineer the Sanitary District of Chicago, American Trust Building, Chicago, Illinois."

EXHIBIT E TO ANSWER

Permit

War Department,
Washington, June 30, 1910.

SIR: Referring to your application of the 27th instant on behalf of the Board of Trustees of The Sanitary District of Chicago to open a channel from the Calumet River to its existing Main Channel so as to substitute two routes instead of one between Lake Michigan and its canal, I have the honor to advise you to the following effect:

It appears from the records of the Department that by an instrument executed May 8, 1899, The Sanitary District of Chicago was given permission to connect its Drainage Canal with the South Branch of the Chicago River at Robey Street, in the City of Chicago, and to divert the waters of Lake Michigan through the Chicago River into said canal, subject to certain specified conditions designed to limit the amount of such diversion and in other ways to protect the public interest. The permission so granted was subsequently modified at various times, and by an instrument executed December 5, 1901, the amount of flow was fixed at not exceeding 250,000 cubic feet per minute, equivalent to 4,167 cubic feet per second, which is the present rate allowed. At the time the original permit was given a connection with the Calumet River was not mentioned but if it had been it is probable that a connection with that river as well as with the Chicago River would have been allowed.

So long as the water-flow remains unchanged there seems to be no special objections to its extension to both rivers instead of confining it to a single one, especially since if the new (Calumet) route be developed later to a navigable state the double route will be advantage[fol. 204]ous to navigation interests. Accordingly, in view of the favorable recommendation of the Chief of Engineers and of the consent thereto by the Attorney General, under the conditions hereinafter prescribed, the Department hereby modifies the existing permission so as to allow the division of the already permitted water-flow in such manner as to reach the Sanitary District Canal by way of the Calumet River and a connecting channel, as well as by way of its present route through the Chicago River, subject to all pertinent conditions of the existing permissions and to other express conditions, as follows:

(a) That it be distinctly understood that it is the intention of the Secretary of War to submit the questions connected with the work of The Sanitary District of Chicago to Congress for consideration and final action, and that this permit shall be subject to such action as may be taken by Congress.

(b) That if at any time it become apparent that the current created by such drainage work in the Calumet, as well as Chicago rivers, be unreasonably obstructive to navigation, or injurious to property, the Secretary of War reserves the right to close the discharge through

said channel or rivers, or to modify it to such an extent as may be demanded by navigation and property interests along said rivers.

(c) That The Sanitary District of Chicago must assume all responsibility for damages to property and navigation interests by reason of the introduction of a current in the Calumet as well as Chicago river.

(d) That the amount of water withdrawn from Lake Michigan, through the Chicago and Calumet rivers together, shall not exceed the total amount of 250,000 cubic feet per minute (4,167 cubic feet per second) already authorized to be withdrawn through the Chicago River alone.

(e) That the permission herein given shall be subject to such [fol. 205] modification as in the opinion of the Secretary of War the public interests may from time to time require.

(f) That this permission shall in nowise affect or in any manner be used in the friendly suit now pending in the Circuit Court of the United States for the Northern District of Illinois brought by the United States of America against the Sanitary District of Chicago, to determine the right of the said Sanitary District to divert from Lake Michigan for sanitary purposes an amount of water in excess of that now being diverted, without having first obtained a permit from the Secretary of War.

(g) That the War Department shall have free access at all times to the waterflow records of The Sanitary District of Chicago and free access also to the regulating works and all other parts of its canals for the purpose of checking records or making water-flow measurements.

(h) That the plans for the proposed work shall be submitted to and approved by the Chief of Engineers and the Secretary of War.

(i) That the work shall be subject to the supervision and approval of the Engineers Officer of the United States Army in charge of the locality.

Very respectfully, Robert Shaw Oliver, Acting Secretary of War. Mr. George M. Wisner, Chief Engineer Sanitary District of Chicago, Chicago, Ill.

(Reprinted from the proceedings of the Board of Trustees, November 2, 1911, pages 1323-25.)

Memorial to Congress on the Subject of the Illinois and Michigan Canal

(Laws Extra Session, 1826, p. 97)

To the Honorable the Senate and House of Representatives of the United States of America in Congress assembled:

The memorial of the General Assembly of the State of Illinois respectfully represents that the construction of a canal uniting the waters of Lake Michigan with the Illinois river, will form an important addition to the connecting links in the chain of internal navigation, which will effectually secure the indissoluble union of the confederate members of this great and powerful Republic. By the completion of this great and valuable work, the connection between the north and the south, the east and the west, would be strengthened by the ties of commercial intercourse and social neighborhood, and the union of the states might bid defiance to internal commotion, sectional jealousy and foreign invasion. All the states of the Union would then feel the most powerful motives to resist every attempt at dissolution. To effect so great and desirable an object, your memorialists believe to be of sufficient importance to engage the attention and awaken the munificent patronage of a government whose principle of action is the promotion of the general welfare. Your memorialists are sensibly alive to the spirit of improvement that manifests itself in almost every section of our extensive country, and would fain lend a helping hand in so great and good a cause; their situation, however, forbids their doing much, without the aid of the federal government; into whose treasury almost all the funds whether brought hither by emigrants or earned by the industry of their citizens, are paid for the purchase of the public lands. While this state [fol. 207] of things shall continue and the money thus paid into the treasury of the Union is taken out of our State, our people will not be able to engage in the glorious work of improving our common country. Ought the people of this State to stand by with folded arms and behold the great work of internal improvement progress in other states without making an effort to improve their own conditions, and at the same time advance the interest of our beloved country? A condition thus paralyzed, is at war, not only with our interests, but with the best feelings of our hearts. Did this State possess the public domain lying within its bounds, as in the case with the older members of this confederacy, your memorialists would not appear before your honorable body to solicit aid in this important work. If, as your memorialists believe, the construction of this canal would be highly beneficial to the Union at large; if the receipts into the treasury of the United States would be augmented by the increased sales of public lands; and if the interest of this State would be also advanced thereby; is it unreasonable to apply to a paternal government for assistance in the promotion of such beneficial ends? It is un-

necessary for your memorialists to enlarge on the great advantages of this canal to the Union, in the facilities to be afforded in the event of a war with either the Indian tribes inhabiting our frontier, or the British nation. Your honorable body is aware that this State is situated on the borders of an Indian country, filled with numerous and powerful tribes of the sons of the forest. If our country should be again engaged in war, the saving of expense in the transportation of munitions of war, would alone defray the expense of the contemplated canal, and justify the United States in making a liberal appropriation for its construction. Your memorialists do not, however, ask your honorable body to appropriate money out of the treasury to aid them in this work; they only ask for a tract of land, [fol. 208] through which the contemplated canal may pass, and which, for a series of years, will be wholly unproductive to the government unless the canal shall be commenced under auspices favorable to its completion; in which event all the land in the vicinity would immediately become available to the United States. Your memorialists sincerely believe that a liberal appropriation of land for this object, would, even in a pecuniary point of view be of immense importance to the treasury of the Union. The public lands in the vicinity would not only sell, but at a considerable advance upon the minimum price. Should this opinion be correct (and does not experience justify it?) the United States would be gainers by the proposed donation to the State. Your memorialists further state that at their last session, they passed an act of incorporation, upon very liberal terms, authorizing a company to construct the projected canal; but the remoteness of the country from the residence of capitalists, has prevented them from engaging in the work. At their present session, your memorialists have repealed the charter; and their only hope of soon beginning the work depends upon the liberality of your honorable body. Your memorialists have caused the route to be explored and estimates to be made of the probable expense of the work; from which it appears that the cost of constructing the canal will not be less than \$600,000 and may possibly amount to \$700,000. To the end, therefore, that your memorialists may be enabled to commence and complete this great and useful work, we pray your honorable body to grant to this State the respective townships of land through which the contemplated canal may pass; the avails of which, to be appropriated exclusively, to the construction of said canal, upon such terms and conditions as to your honorable body may seem proper.

[fol. 209]

EXHIBIT "G" TO ANSWER

"An Ordinance for Cleansing the Chicago River and Appropriating the Proceeds of Two Hundred and Fifty Bonds Therefor.

Section 1. Be it ordained by the Common Council of the City of Chicago (June 5, 1865), That the plan of the board of public works for cleansing the Chicago River and its branches by cutting down

the summit of the Illinois and Michigan Canal below the level of Lake Michigan so as to draw from it at a low stage of water in the lake not less than twenty-four thousand (24,000) cubic feet of water per minute, is hereby approved, and said board are hereby authorized to execute said work.

Section 2. That the board of public works are hereby authorized and empowered for the purpose of prosecuting the work described in the previous section, to make any contract necessary to carry into effect such purpose with the trustees of the Illinois and Michigan Canal, in conformity with and subject to the general provisions of the city charter.

Section 3. That as a temporary expedient for cleansing the South Branch of the Chicago River, the said board are hereby authorized and empowered to contract with the said trustees for the pumping from the river into the canal, by the hydraulic works at Bridgeport, and discharging through the canal of such amount of water as shall be found necessary and practicable for such purpose.

Section 4. That for the purpose of carrying out the improvement specified in the foregoing sections, the board of public works be and they are hereby authorized to issue 250 bonds of the denomination of \$1,000 each, to be dated July 1, 1865, and payable in New York, twenty-five years after the date thereof, with coupons for interest, at the rate of seven per centum per annum, payable semi-annually in New York; the said bonds to be issued in conformity with the provisions of an act of the General Assembly of the State of Illinois, approved February 15, 1865, and entitled 'An act to amend an act entitled an act to reduce the charter of the City of Chicago, and the several acts amendatory thereof, into one act, and to revise the same,' approved February 13, 1863."

[fol. 210]

EXHIBIT H TO ANSWER

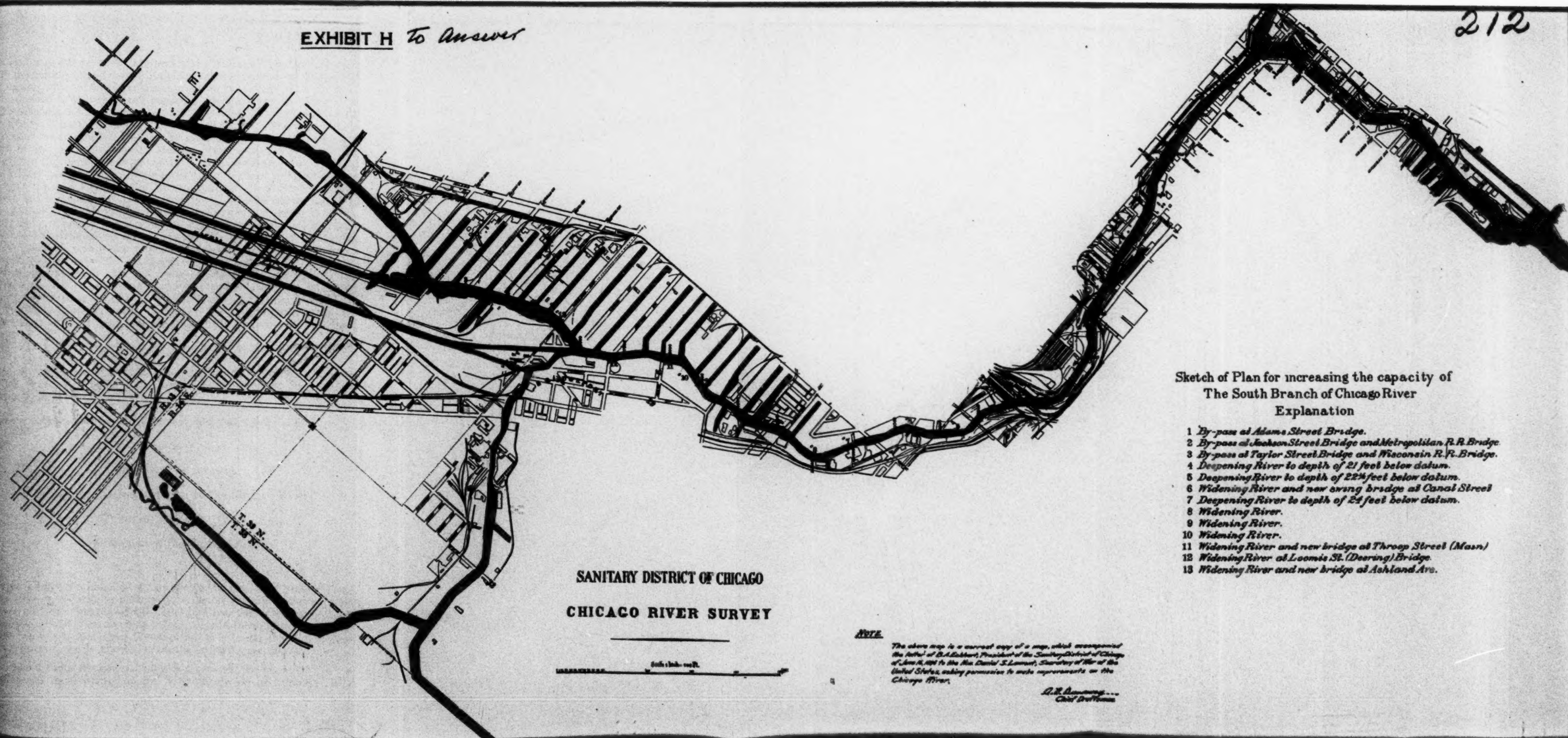
Application of the Sanitary District for the Improvement of the
Chicago River

Chicago, June 16, 1896.

To the Honorable Daniel S. Lamont, Secretary of War, Washington,
D. C.

DEAR SIR: The work of The Sanitary District of Chicago has progressed so far that it is now necessary for us to enter upon that which must be done in the Chicago River to make available the artificial channel which we have under construction from Robey Street, Chicago, to Lockport in Will County, twenty-eight miles distant.

Our connection with Lake Michigan must be through the Chicago river with the West Fork of the South Branch of which we make a junction at Robey Street. We send herewith a map showing in a



SANITARY DISTRICT OF CHICAGO
CHICAGO RIVER SURVEY

500 feet

NOTE

The above map is a correct copy of a map, which accompanied the letter of D. A. Ladd, President of the Sanitary District of Chicago, of June 14, 1888, to the Hon. Daniel S. Lamont, Secretary of War of the United States, asking permission to make improvements on the Chicago River.

D. S. Lamont
Chief Engineer

Sketch of Plan for increasing the capacity of
The South Branch of Chicago River
Explanation

- 1 By-pass at Adams Street Bridge.
- 2 By-pass at Jackson Street Bridge and Metropolitan R.R. Bridge.
- 3 By-pass at Taylor Street Bridge and Wisconsin R.R. Bridge.
- 4 Deepening River to depth of 21 feet below datum.
- 5 Deepening River to depth of 22 1/2 feet below datum.
- 6 Widening River and new swing bridge at Canal Street.
- 7 Deepening River to depth of 24 feet below datum.
- 8 Widening River.
- 9 Widening River.
- 10 Widening River.
- 11 Widening River and new bridge at Throop Street (Main).
- 12 Widening River at Loomis St. (Deering) Bridge.
- 13 Widening River and new bridge at Ashland Ave.

general way our plans for improving the Chicago River by widening and deepening at the points indicated thereon by red hatchings and by figures which refer to explanation, given in the legend on the map. It is desired to so correct and regularize the cross section of the river as to secure a flowage capacity of 300,000 cubic feet per minute with a velocity of one and one-quarter miles per hour. The cross section necessary to accomplish this can be obtained throughout the greater part of the distance between Monroe Street and Robey Street, by dredging the river to a depth of 20 ft. at mid stream, with 12 ft. at dock lines and a uniform slope away from docks of one foot in five, so that the full depth would be reached forty feet from the dock lines; but there are places so narrow that this cross section can only be obtained by widening the river; and again the depth to be obtained [fol. 211] is limited in the vicinity of Van Buren Street is limited by the height of the crown of the tunnel. To obviate this difficulty it is purposed to secure the requisite cross section by constructing a by-pass to the west of the bridges at Adams, Jackson and Van Buren Streets, as indicated. We ask your permission to proceed with the work upon the lines indicated and so far as is consistent with propriety the co-operation of the United States Engineering Department.

Awaiting your favorable reply, and holding ourselves ready to respond to any call from you for fuller information as to our plans, I am

Yours respectfully, (Signed) B. A. Eckhart, President.

A copy of the above letter is found at Page 297 of the Clerk's Copy Letter Book "C," being letter book from September 20, 1895, to January 11, 1897.

(Here follows Exhibit H to Answer, marked side folio page 212)

[fol. 213]

EXHIBIT I TO ANSWER

Permit for the Improvement of the Chicago River

(Permit of July 3rd, 1896)

Improvement of the Chicago River

July 3, 1896.

SIR: I have the honor to acknowledge the receipt of your letter of 16th ultimo, requesting permission to make certain changes in the capacity of the channel of the Chicago River for drainage purposes at points indicated on the map accompanying the application, and in reply beg to say that upon investigation it is found that the permission requested can be granted upon the following conditions:

1. That while the general plan is approved, the Sanitary District of Chicago must furnish plans in triplicate on an enlarged scale

showing each proposed new bridge, each by-pass and each new dock or wharf proposed to be built, in order that the Secretary of War may act intelligently in each case.

2. That this authority shall not be interpreted as approval of the plans of the Sanitary District of Chicago to introduce a current into Chicago River. This latter proposition must hereafter be submitted for consideration.

3. That it will not cover obstructions to navigation by reason of this work while in progress or when completed.

4. That the United States shall not be put to expense by reason of this work.

5. That this authority will expire by limitation in two years from date unless extended.

Very respectfully, (Signed) Joseph B. Doe, Acting Secretary of War. B. A. Eckhart, Esq., President the Sanitary District of Chicago, Rialto Building, Chicago, Ill.

[fol. 214]

EXHIBIT J TO ANSWER

The Sanitary District of Chicago

Security Building

Chicago, April 26, 1900.

To the Honorable the Secretary of War.

SIR: The Sanitary District of Chicago, a municipal corporation organized and existing under the laws of the State of Illinois, respectfully represents that, by the laws of the State of Illinois and the charter of this petitioner, it is authorized to enter upon, widen, deepen and otherwise improve any navigable stream, river or other water-way. That in pursuance of the power conferred upon it by the statutes of the State of Illinois, and in the performance of the duties enjoined upon it by the act of the Legislature authorizing its creation, and under which it is acting, it has been determined to improve the Chicago River by widening and deepening the same and to the end that such action on the part of your petitioner may be conformable to law and the statutes of the United States in that behalf, it hereby makes application for permission to make the changes, alterations and improvements in said Chicago River from or near Lake Street in the City of Chicago to or near Ashland Avenue in the City of Chicago, said work to conform to the plan and specifications as follows:

(a) A map herewith exhibits the existing boundaries of that part of the South Branch of the Chicago River which it purposes and desires to improve.

(b) The work to be done contemplates widening the river to a width of two hundred (200) feet between dock lines, except in so far as bridge abutments may project into the stream outside of the new [fol. 215] dock lines; said widening in all cases to be made with a view of improving the navigability of the stream.

(c) The work to be so done as to ultimately permit excavation of the river bed to a depth of thirty (30) feet below water surface throughout the central portion of the stream.

(d) The widening of the river is to be so disposed that the effect will be to produce a straighter channel than now exists and, furthermore, to result in a continuous dock line having straighter alignment and being better disposed for navigation than the docks which now exist.

(e) The work to be done is to be prosecuted progressively as to time. The rate of progress being limited by the rapidity with which right of way may be acquired and the resources for the execution of the work to be made available. The modification and alteration of said river as above indicated will greatly benefit navigation in said river. Your petitioner, therefore, respectfully requests that the plan of improvement as above outlined be approved by you.

Awaiting as early a reply as practicable under the circumstances, your petitioner has the honor, to be.

Very respectfully yours, The Sanitary District of Chicago,
by William Boldenweck, President. Attest: Joseph H.
Haas, Clerk.

[fol. 216]

EXHIBIT J-I TO ANSWER

Chicago, June 7, 1900.

To the Honorable, the Secretary of War.

SIR: Under date of April 26, 1900, the Sanitary District of Chicago had the honor to address a communication to you containing an outline of the proposed improvement of a portion of the South Branch of the Chicago River. Accompanying the letter was a map showing the location of the South Branch of the Chicago River, the bridges spanning said river and, also, the width of the stream along the entire course of the South Branch of the river. Since that date the Sanitary District of Chicago passed an ordinance for the improvement of the South Branch of the Chicago River from the south line of Twelfth Street to the east line of Ashland Avenue, so as to make said South Branch, between the lines aforesaid, of a uniform width of two hundred (200) feet; the work to be done so as to ultimately permit excavation of the river bed to a depth of thirty (30) feet below water surface throughout the central of said stream, in accordance with the plans adopted by the Board of Trustees of the Sanitary District of Chicago, a copy of which plans is hereto annexed. The

ordinance referred to being marked Exhibit "A," with this letter; and the maps showing the plans of the proposed improvement being marked Exhibit "B." The maps are in two sections, known respectively as No. 2 and No. 3.

The Sanitary District of Chicago is a municipal corporation, organized and existing under the laws of the State of Illinois and by the laws of said State and the charter of said Sanitary District, it is authorized to enter upon, deepen, widen and otherwise improve [fols. 217 & 218] any navigable stream, river, or other water-way; and that in pursuance of the power conferred upon it by the statutes of the State of Illinois and in performance of the duties enjoyed upon it by the act of the legislature authorizing its creation, and under which it is acting, it determined upon said plans outlined in the enclosed ordinance and further illustrated by the maps hereto annexed; and the said Sanitary District, in compliance with the Statutes of the United States, hereby makes application to you for permission to make the changes, alterations and improvements in said South Branch of the Chicago River, from the south line of Twelfth Street to the east line of Ashland Avenue.

Awaiting as early a reply as practicable under the circumstances, your petitioner has the honor to be,

Very respectfully yours, The Sanitary District of Chicago,
by William Boldenweck, President. Attest: Joseph F.
Haas, Clerk.

(Here follows Exhibits K¹ and K² to Answer, marked side folio
pages 219 and 220)

[fol. 221]

EXHIBIT L TO ANSWER

War Department,
Washington, July 11, 1900.

SIR: I have the honor to acknowledge the receipt of your letter of April 26th last, requesting, in behalf of the Sanitary District of Chicago, permission to change, alter and improve the Chicago River, from Lake Street to Ashland Avenue, in Chicago, as shown on maps which accompanied your said letter.

Replying thereto I beg to inform you that there is no objection on the part of the War Department to the prosecution of work of improvement of Chicago River, specified in the above mentioned letter and delineated on the maps which accompanied the same, it being understood that this statement as to the attitude of the War Department shall not be understood as involving the general government in any way with the expense incident to the carrying out of the project, and does not in any way invalidate, waive or affect the right of the Secretary of War to regulate or revoke the permit granted under date of May 8, 1899, to the Sanitary District of Chicago, to divert the waters of the Chicago River and cause them to flow into

EXHIBIT K1 to Answer

SANITARY DISTRICT OF CHICAGO
MAP
OF THE
CHICAGO RIVER

SHEET NO 3

FROM KINZIE STREET TO EIGHTEENTH STREET

Scale 500 Feet to an Inch

Proposed from Chicago River Survey

Land acquired by U.S. Government colored green
Proposed River Improvement colored red

REMARKS

This plan is a true and correct copy of a map made by the
Sanitary District of Chicago, June 1, 1887, and approved
by the Board of Directors of the Sanitary District, President
of the Sanitary District of Chicago, July 1, 1887, providing
for the improvement of the Chicago River.

W. H. Langford
City Engineer

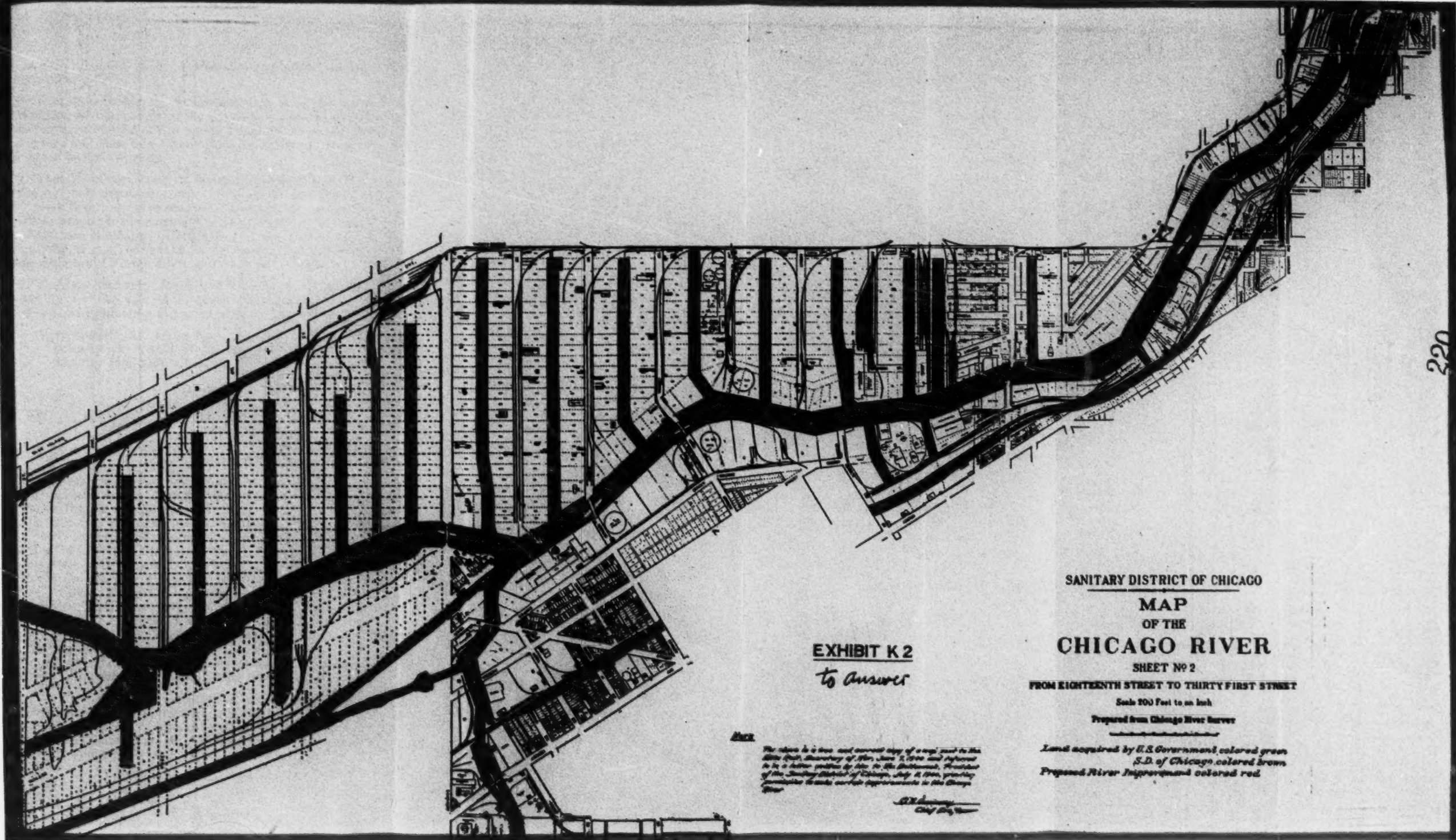


EXHIBIT K 2

to answer

Map

The above is a true and correct copy of a map sent to the City Clerk, Secretary of the City, June 1, 1900 and referred to in a letter passed to the City Clerk, Secretary of the Sanitary District of Chicago, July 1, 1900, granting permission to make surface improvements to the Chicago River.

City Clerk

SANITARY DISTRICT OF CHICAGO

MAP
OF THE
CHICAGO RIVER

SHEET No 2

FROM EIGHTEENTH STREET TO THIRTY FIRST STREET

Scale 200 Feet to an inch

Prepared from Chicago River Survey

*Land acquired by U.S. Government colored green
S.D. of Chicago colored brown
Proposed River Improvements colored red*

the artificial channel, such permission being subject to the following conditions, viz:

"1. That it be distinctly understood that it is the intention of the Secretary of War to submit the questions connected with the work of the Sanitary District of Chicago to Congress for consideration and final action and that this permit shall be subject to such action as may be taken by Congress.

"2. That if, at any time, it becomes apparent that the current created by such drainage works in the South and Main Branches of Chicago River, be unreasonably obstructive to navigation or injurious to property, the Secretary of War reserves the right to close [fol. 222] said discharge through said channel or to modify it to such extent as may be demanded by navigation and property interests along said Chicago River and its South Branch.

"3. That the Sanitary District of Chicago must assume all responsibility for damages to property and navigation interests by reason of the introduction of a current in Chicago River.

Very respectfully, Elihu Root, Secretary of War. Mr. Wm. Boldenweck, President the Sanitary District of Chicago, Security Building, Chicago, Ill."

[fol. 223]

EXHIBIT L-1

War Department,
Washington, July 11, 1900.

SIR: In response to your application of the 7th ultimo, for permission to make certain changes, alterations and improvements in the South Branch of the Chicago River, from the south line of Twelfth Street to the east line of Ashland Avenue, as shown on plans which accompanied said application, I beg to inform you that there is no objection on the part of the War Department to the prosecution of the work as specified, it being understood that this statement as to the attitude of the War Department shall not be understood as involving the general government in any way with the expense incident to the carrying out of the project, and does not in any way invalidate, waive or affect the right of the Secretary of War to regulate or revoke the permit granted, under date of May 8, 1899, to the Sanitary District of Chicago, to divert the waters of the Chicago River and cause them to flow into the artificial channel such permission being subject to the following conditions, viz:

"1. That it be distinctly understood that it is the intention of the Secretary of War to submit the question connected with the work of the Sanitary District of Chicago to Congress for consideration and final action and that this permit shall be subject to such action as may be taken by Congress.

"2. That if, at any time, it becomes apparent that the current created by such drainage works in the South and Main Branches of Chicago River, be unreasonably obstructive to navigation or injurious to property, the Secretary of War reserves the right to close said discharge through said channel or to modify it to such extent as may be demanded by navigation and property interests along said Chicago River and its South Branch.

"3. That the Sanitary District of Chicago must assume all responsibility for damages to property and navigation interests by reason of the introduction of a current in Chicago River.

Very respectfully, Elihu Root, Secretary of War. Mr. Wm. Boldenweck, President the Sanitary District of Chicago, Security Building, Chicago, Ill."

[File endorsement omitted.]

(Here follows Exhibit M to answer, marked side folio pages 225 and 226.)

[fols. 227-228] IN THE DISTRICT COURT OF THE UNITED STATES FOR
THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

NOTICE OF MOTION TO STRIKE FROM ANSWER—Filed February
28, 1914

To Edmund D. Adcock, Karpen Building, and Alfred S. Austrian,
American Trust Building, Chicago, Solicitors for Defendant:

Please take notice that on Saturday, February 28th, 1914, at the opening of court on that day, or as soon thereafter as counsel can be heard, before Honorable Kenesaw M. Landis, Judge of the United States District Court for the Northern District of Illinois, at his court room in the city of Chicago, I shall move to strike from the answer herein each of the allegations in paragraphs 20-46, inclusive.

And for grounds for this motion, the complainant states as to each of said allegations, that it is not responsive to any averment in the bill of complaint; that it sets forth affirmative matters not proper to be proved as a defense in this case, and that evidence offered at the hearing in support thereof would necessarily be excluded as incompetent, irrelevant, immaterial and not pertinent to any issue in this case.

The complainant, at the time above stated, will enter said motion and ask to have the same set for hearing in accordance with Equity Rule thirty-three.

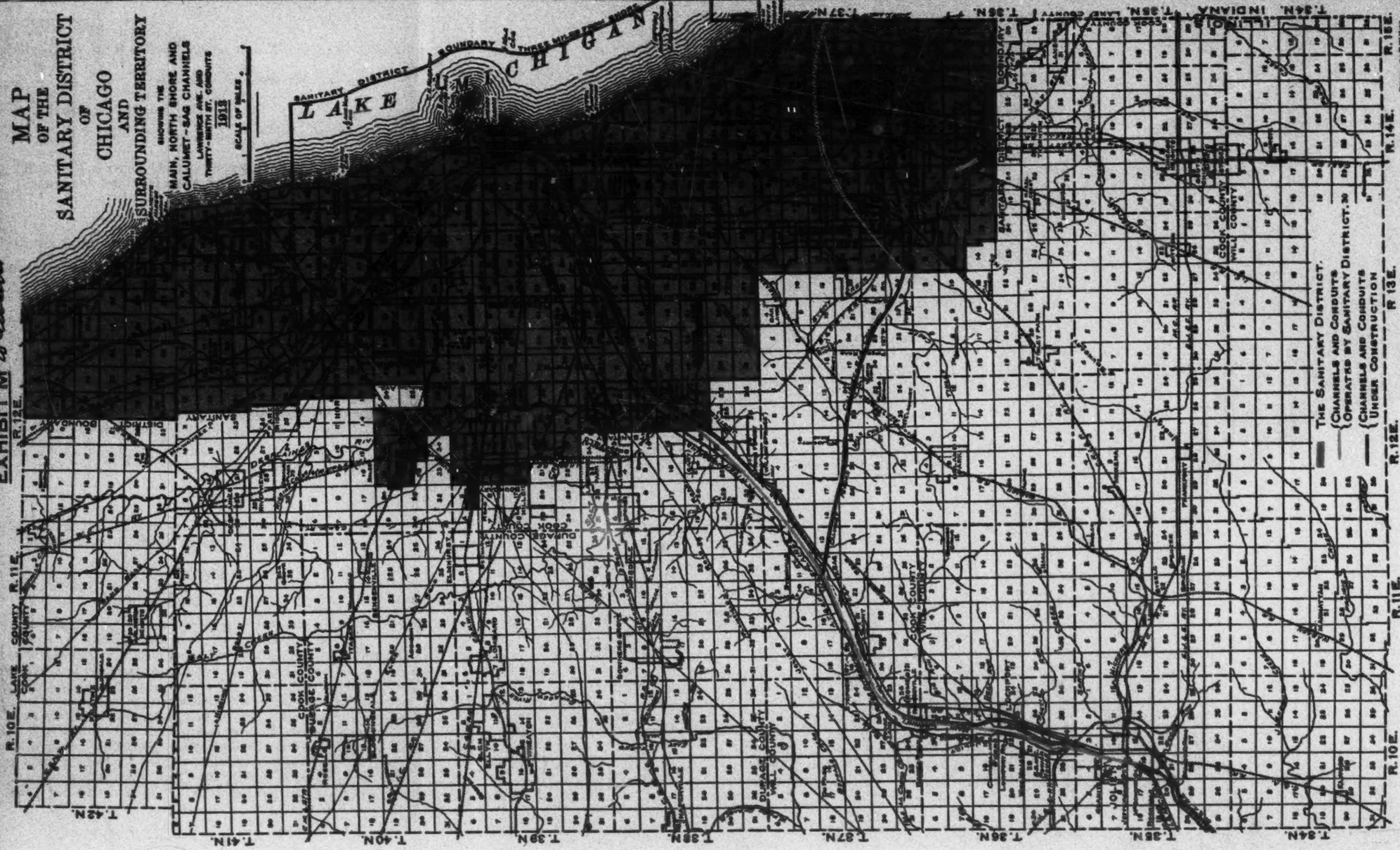
James H. Wilkerson, United States Attorney.

MAP
OF THE
SANITARY DISTRICT
OF
CHICAGO
AND
SURROUNDING TERRITORY

SHOWING THE
MAIN, NORTH SHORE AND
CALUMET-SAG CHANNELS
LAWRENCE AVE. AND
THIRTY-NINTH ST. GOING

1918

SCALE OF VALUES.



Received copy of the above notice this 27th day of February,
A. D. 1914.

Alfred S. Austrian, Edmund D. Adcock.

[File endorsement omitted.]

[fols. 229 & 230] IN THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

ORDER CONSOLIDATING CAUSES—Entered June 18, 1923

This cause came on at this term and was argued by counsel, and thereupon, upon consideration thereof, it was ordered, adjudged and decreed as follows:

That the case of United States, Complainant, vs. Sanitary District of Chicago, Defendant, Number C C 29019 upon the docket of this court, and instituted on March 23, 1908, be and the same is hereby consolidated with this cause, and the orders, proceedings and evidence presented and testimony taken or depositions filed in said cause, are hereby made orders, proceedings, evidence, testimony and depositions in this cause, the consolidated cause to proceed under the title of this cause.

Enter:

Carpenter, Judge. 18 June, 1923.

[fol. 231] IN THE DISTRICT COURT OF THE UNITED STATES FOR
THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

OPINION—Filed June 18, 1923

CARPENTER, District Judge (orally): It is needless to say that this litigation is of vital interest to the people of the State of Illinois. It was started nearly fifteen years ago by bill filed in behalf of the United States of America against the Sanitary District of Chicago to restrain the defendant from diverting from the waters of Lake Michigan in excess of approximately 4,500 feet per second.

The parties used the better part of six years in putting in the proof. The matter was then presented with appropriate briefs to my distinguished colleague, Judge Landis, for final determination. Judge Landis kept the matter under advisement for another six years, moved undoubtedly by the thought that the State of Illinois was being benefitted all of the time by the withdrawal of 10,000

cubic feet a second by the defendant, and that the Government was not in any way actually harmed.

On June 19th, 1920, Judge Landis rendered an oral opinion, finding in effect that the withdrawal in excess of 4,167 cubic feet a second by the Sanitary District of Chicago was without authority of law; that the withdrawals then being made reduced the level [fol. 232] of Lake Michigan, and other of the navigable waters of the United States, to such an extent as to be an interference with navigation; that the Secretary of War, acting under Congressional powers, had never given his consent to such excessive withdrawals; that the diversion by the Sanitary District was therefore unlawful, and an injunction should issue.

A motion was made thereafter not for a reconsideration of the findings of the Court, but for the purpose of settling the terms of the final decree.

Attorneys for the Sanitary District urged the evidence showed clearly that by the construction of weirs and other compensating works at a relatively small expense, the Government could restore the various water levels which had been reduced by the flow into the drainage canal. They also urged that the State of Illinois, by appropriate legislation, had authorized the Sanitary District to agree with the United States Government to stand the cost of such weirs and compensating works and their annual maintenance, and strenuously urged upon the Court that as a condition to the entry of any injunction, the plaintiff Government should agree to erect and maintain such works at the expense of the defendant.

Counsel for the Drainage District have also urged upon the Court at this time to reconsider entirely the case upon the evidence presented.

[fol. 233] This Court is very much disinclined to interfere with the judgment of Judge Landis. At least it is entitled to the weight that would be given to the report of a Master in Chancery or Special Commissioner. In addition, this Court has gone over the entire record, and is able to say that it agrees with Judge Landis in every respect, although from a legal standpoint, with some reluctance.

It is not necessary to go into the duties of the Secretary of War with respect to navigable waters. It is not necessary to discuss the question of whether when the State of Illinois entered the Union in 1818 it joined with special reservations with respect to its own police powers. A reading of the Federal decisions from *Gibbons vs. Ogden*, 9 Wheat, 1, down to the present date leaves no escape from the thought that the States in adopting the Constitution surrendered to the central government everything, without stint or reservation, so far as the terms of the Constitution are concerned. The right to regulate commerce was conferred with many other things, and that right imposed upon the central government to see to it that navigation was not interfered with, either by individuals, the several States, or any foreign power. It is very true that it is the duty of the State of Illinois, in the exercise of its police power, to provide for the safety and welfare of its own people. On the other hand, if that

safety and welfare depends upon the operation of the things granted to the central government, the State of Illinois must look to Congress for eventual aid or relief.

[fol. 234] The evidence shows, and Judge Landis found and I find that the waters of Lake Michigan and other navigable waters of the Great Lakes have been reduced in level by the amount of water in excess of 4,167 cubic feet per second withdrawn from Lake Michigan by the defendant. From the standpoint of the practical mariner the testimony may not be satisfactory. It was given by engineers more or less highly technical, but thoroughly equipped in their profession. In fact no Lake captain testified that by reason of the lowering of the level of Lake Michigan was navigation interfered with. I have grave doubts whether any boat has been stranded or delayed by reason of the action of the Sanitary District.

On the other hand, the water levels have been reduced, and the Secretary of War, in whom is reposed the sole authority in matters of this kind, has determined that there was an interference with navigation, and a permit to the Sanitary District to continue in its present withdrawals was refused.

The jurisdiction of the Court has not and could not be challenged, and an injunction must issue against the defendant.

The record shows that the Sanitary District of Chicago has expended in its work some hundreds of millions of dollars; and the evidence shows rather conclusively that no other system of disposing of the sewerage in the great district covered would work so well as that devised by the Sanitary District. The City of Chicago, since the Drainage District began to operate, has practically doubled in population. The district served by the Sanitary District holds more people than over forty states in the Union. The rate of typhoid fever since the completion of the Drainage Canal has been reduced [fol. 235] from seventy-five per hundred thousand to a negligible number.

The testimony of Government engineers shows that it would take from ten to twenty-five years for the Drainage District to erect sewerage treatment and disposal works to handle the sewerage within the Drainage District, if the flow of water was reduced from 10,000 to 4,167 cubic feet per second.

This matter is a subject which needs the consideration of thinking people, not only in the State of Illinois, but in the whole United States. The Treaty with Canada entered into some years ago seemed to contemplate an acquiescence on the part of the Canadian Government to the withdrawal of 10,000 cubic feet a second by the Drainage District. However that may be, the Secretary of War has not given his official consent. Whether the increased withdrawal should or should not be made is properly a political and not a legal question, in the absence of consent by the Secretary of War. The Legislature of the State of Illinois, the various civic bodies, the Association of Commerce, and senators and representatives should see to it that at the earliest possible moment the situation here is brought to the attention of Congress, so that by appropriate legisla-

tion the health and welfare of this great community may be safeguarded. I have no doubt that when the matter is properly presented it will be taken up by Congress and by the State Department, and some plan devised which will bring about adequate and the desired results.

It goes without saying that this Court will not issue an injunction to be effective forthwith. It cannot impose the conditions so [fols. 236 & 237] strenuously urged by the attorneys for the Sanitary District. It is doubtful whether the State of Illinois could authorize expenditures to be made in foreign states and foreign countries to restore the water levels.

On the testimony of the Government engineers the Court might, in the exercise of a sound discretion, delay the effectiveness of its injunction for from fifteen to twenty-five years to enable the Sanitary District or the State of Illinois to arrange for other means of disposing of the sewerage now handled by the Sanitary District.

Believing as I do that it is a matter for the immediate action of Congress, a decree may be prepared finding the facts as stated in the Bill and enjoining the defendant from withdrawing from Lake Michigan in excess of 4,167 cubic feet a second; the decree, however, not to go into effect for six months.

The matter must necessarily go to the Supreme Court of the United States for final settlement, and no doubt, if need be, when the record is there filed, application may be made to that Court for a superseas or further stay.

Carpenter, Dist. Judge. 18 June, 1923.

[File endorsement omitted.]

[fol. 238 & 239] IN THE UNITED STATES DISTRICT COURT FOR THE
NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

ORDER REFUSING OFFER OF SANITARY DISTRICT TO CONSTRUCT CERTAIN WORKS—Entered June 18, 1923

This cause came on to be further heard at this term and was argued by counsel, and thereupon, upon consideration thereof, it was ordered, adjudged and decreed, as follows:

(1) The motion presented herein on the 12th day of July, 1920, by the defendant, asking that the defendant be not enjoined or restrained from withdrawing from Lake Michigan less than ten thousand (10,000) cubic seconds feet of water, and in connection with which said motion an offer was made to pay cost of constructing and maintaining such works as might be provided by complainant to off-set for the lowering of the surface elevations of Lakes Michigan, Huron, St. Claire, Erie and Ontario, due to a diversion of said

amount by the defendant at Chicago, is hereby denied, and the said offer is refused.

Enter.

Carpenter, Judge. 18 June, 1923.

[fols. 240 & 241]

Copy

IN THE DISTRICT COURT OF THE UNITED STATES, NORTHERN DISTRICT
OF ILLINOIS, EASTERN DIVISION

[Title omitted]

Consolidated Causes

DECREE FOR INJUNCTIONS

This cause came on to be further heard at this term, and was argued by counsel; and thereupon, upon consideration thereof, it was ordered, adjudged and decreed as follows, viz:

That the defendant, the Sanitary District of Chicago, its Board of Trustees, officers, agents, attorneys, representatives, employees and servants, and all other persons acting or claiming or assuming to act under its authority, be, and they hereby are, and each of them hereby is, enjoined from diverting or abstracting any waters from Lake Michigan over and above or in excess of 250,000 cubic feet per minute.

The operation of this injunction is hereby stayed for a period of six months to enable the defendant to present the record herein to the Supreme Court of the United States.

Enter:

Carpenter, Judge. June 18th, A. D. 1923.

[fol. 242] IN THE DISTRICT COURT OF THE UNITED STATES FOR THE
NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

PETITION FOR APPEAL—Filed June 29, 1923

The Sanitary District of Chicago, defendant herein, respectfully shows:

Defendant is aggrieved by the judgment and decree herein rendered on June 18, 1923, in favor of the plaintiff and against the defendant, enjoining and restraining the defendant, its Board of Trustees, officers, agents, attorneys, representatives, employees and servants, and all persons acting or claiming or assuming to act under its authority, as prayed in the plaintiff's complaint, from diverting or abstracting water from Lake Michigan in excess of

250,000 cubic feet per minute; and the defendant, for the reasons specified in the assignment of errors filed herewith, desires to appeal from said decree to the Supreme Court of the United States, and desires that said appeal shall operate as a supersedeas and may suspend during the pendency of said appeal, the effect of said injunction.

Wherefore, defendant prays that the said appeal may be allowed and that the said appeal may operate as a supersedeas and may suspend during the pendency of said appeal the effect of said injunction and decree; that said appeal be made returnable to the Supreme Court of the United States according to law, and that a transcript of the record, proceedings, papers and exhibits upon which said decree was rendered, duly authenticated, be sent to said Supreme Court of the United States, and defendant prays for all general and equitable relief.

Clyde L. Day, Edmund D. Adcock, Solicitors for Defendant.

[File endorsement omitted.]

[fol. 246] IN THE DISTRICT COURT OF THE UNITED STATES, NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

ASSIGNMENT OF ERRORS—Filed June 29, 1923

Now comes the above named defendant, the Sanitary District of Chicago, and says that the final order or decree made and entered herein on the eighteenth day of June, 1923, granting the injunction prayed in the bill of complaint, is erroneous and against the just rights of said defendant, for the following reasons:

(1) Because, as appears from the record in this cause, the plaintiff was not entitled to the injunction granted in said order or decree enjoining the defendant, its Board of Trustees, officers, agents, attorneys, representatives, employes and servants, and all other persons acting or claiming or assuming to act under its authority, from diverting or abstracting any waters from Lake Michigan over and above or in excess of 250,000 cubic feet per minute, and the Court should have refused to enter any order or decree enjoining and restraining the defendant concerning or in respect to the subject matter of said complaint, and should have dismissed plaintiff's [fol. 247] complaint for want of equity.

(2) Because under the Commerce Clause of the Constitution of the United States, Article I, Section 8, Clause Third, wherein Congress is given power to regulate commerce with foreign nations and among the several states and with the Indian tribes, neither Congress nor any officer of the United States has power or authority to regulate or limit the State of Illinois or the Sanitary District of

Chicago, a municipal corporation created under its authority, in abstracting or diverting water from Lake Michigan for public welfare and in exercise of the state's police power within the limits proposed by defendant, and as and in the manner abstracted or diverted or proposed to be abstracted or diverted.

(3) Because the diversion of water from Lake Michigan by defendant to the Desplaines and Illinois Rivers by means of a canal, called herein for convenience "Main Channel," and the reversal of the flow of the Chicago River and certain of its branches, including diversion works supplementary thereto, as appears by the record, has been, is being, and is proposed to be done in the exercise of the police powers of the State of Illinois for the benefit of public health and welfare.

(4) Because the diversion of water from Lake Michigan by defendant to the Desplaines and Illinois Rivers by means of its Main Channel and the reversal of the flow of the Chicago River and certain of its branches, including diversion works supplementary thereto, as appears by the record, has been, is being, and is proposed to be [fol. 248] done in the exercise of the police powers of the State of Illinois, and has been and is the only means by which the sewage of Chicago and its surrounding territory within the territorial limits of the Sanitary District of Chicago may be diverted from Lake Michigan, the only drinking water supply for the population of said area, to protect health and preserve lives.

(5) Because the diversion of water from Lake Michigan by defendant to the Desplaines and Illinois Rivers by means of its Main Channel and the reversal of the flow of the Chicago River and certain of its branches, including diversion works supplementary thereto, as appears by the record, has been, is being and is proposed to be done in the exercise of the police powers of the State of Illinois, and is necessary for the public health and welfare and to protect health and preserve lives.

(6) Because the diversion of water from Lake Michigan by defendant to the Desplaines and Illinois Rivers by means of its Main Channel and the reversal of the flow of the Chicago River and certain of its branches, including diversion works supplementary thereto, as appears by the record, has been, is being and is proposed to be done in the exercise of the police powers of the State of Illinois, and is necessary to prevent public nuisances and the breeding of diseases.

(7) Because the defendant, as appears by the record, in diverting water from Lake Michigan in excess of 250,000 cubic feet of water per minute, and in proposing to continue to do so, has been and proposes to continue so doing pursuant to and under an Act of the General Assembly of the State of Illinois passed May 29, 1889, and [fol. 249] in force July 1, 1889, which said Act expressly directs the defendant to divert and abstract through its diversion works water from Lake Michigan at the rate of 20,000 cubic feet of water per

minute for each one hundred thousand of the population of the defendant, such population being now approximately three million people, requiring a diversion of six hundred thousand cubic feet per minute, and said Act of the General Assembly of May 29, 1889, was passed in exercise of the police powers of the State for the public health and welfare, and the acts of the defendant taken thereunder have been, are, and are proposed to be for such purposes.

(8) Because said Act of May 29, 1889, of the General Assembly of Illinois, and Acts amendatory thereof and supplementary thereto, were passed for the sole and only purpose of preserving health and protecting life under the State's police power, and the operation of the defendant's diversion works has been and is for the same purpose, and neither Congress nor any officer of the United States can interfere under the Constitution of the United States with the reasonable exercise of such power.

(9) Because the operation and maintenance of defendant's diversion works under the authority of the State of Illinois for the public health and welfare, as appears by the record, cannot be interfered with by the United States, and particularly if the alleged interference with navigation or impairment thereof is only an indirect result of the operation of said works, the primary and sole purpose of the operation of said works being for the public health and welfare [fol. 250] of the people of the State. The power and authority under which said works have been built and are operated and maintained is a power reserved to the states and not delegated to the United States or Congress under the Constitution.

(10) Because as appears by the record a pure, wholesome, potable drinking water supply for the people of Chicago and its environs and for the people residing within the territorial limits of the Sanitary District of Chicago, cannot be obtained or provided except by the operation and maintenance of the diversion works of defendant and the abstraction from Lake Michigan of 20,000 cubic feet per minute for each hundred thousand of the population thereof, such population being now in excess of three million people requiring water diversion, much greater than 250,000 cubic feet per minute.

(11) Because as appears by the record no works can or may be constructed to take the place of the diversion works operated and maintained by the defendant whereby a pure, wholesome, potable drinking water supply may be provided for said population within the territorial limits of defendant, and whereby the abstraction or diversion of water from Lake Michigan may be reduced to 250,000 cubic feet per minute or to any amount approximately said volume of water.

(12) Because, as appears by the record, no works or means may be constructed or provided supplementary to or to be operated in conjunction with the diversion works built, operated and maintained by defendant whereby the diversion and abstraction of water from Lake Michigan may be reduced or limited to 250,000 cubic feet of

[fol. 251] water per minute or to any amount of water approximating said volume and whereby a wholesome drinking water supply may be provided for the people residing within the limits of the Sanitary District of Chicago.

(13) Because, as appears by the record, the reduction of or limitation of the abstraction and diversion of water from Lake Michigan to 250,000 cubic feet per minute by defendant or any amount approximating said volume as provided by said injunctive decree and within the time provided by said injunctive decree, would immediately cause a great public nuisance to exist in the Chicago River, the Desplaines and Illinois Rivers, and the waters of Lake Michigan at Chicago would become contaminated by sewage, breeding typhoid and other water-born diseases in the people whose only drinking water supply is obtained from Lake Michigan.

(14) Because, as appears from the record, works cannot be constructed to supplement the diversion works built, operated and maintained by defendant which will provide a reasonably pure drinking water supply for Chicago and whereby the abstraction and diversion of water from Lake Michigan may be reduced to 250,000 cubic feet of water per minute within any period less than twenty years.

(15) Because, as appears by the record, it will be necessary in order to supplement the diversion works of defendant with a diversion from Lake Michigan limited to 250,000 cubic feet of water per minute to construct what are known and called artificial sewage purification works, the cost of which is upwards of One Hundred Million Dollars (\$100,000,000), and, further, the construction and [fol. 252] maintenance of works to filter the water supply of Chicago costing upwards of Sixty Million Dollars (\$60,000,000), which works cannot be built, constructed and placed in operation within any period of less than twenty years.

(16) Because, as appears by the record, the total amount of money that may be devoted to construction work that defendant can raise from taxation and by the issuance of bonds within the limits of the Constitutional requirements of the State within the period of twenty years does not exceed One Hundred and Six Million Dollars (\$106,000,000), and such amount can only be raised and provided by such means from time to time during said period, and the last portion of such amount can only be raised at substantially the end of said twenty year period.

(17) Because, as appears by the record, the diversion works constructed, maintained and operated by defendant were built, constructed and maintained to divert from Lake Michigan a total ultimate volume of 600,000 cubic feet of water per minute in order to keep the Chicago River and certain of its branches to its Main Channel flowing in a reverse direction from its original flow and away from Lake Michigan, so that none of the sewage emptied into said river by means of many sewers, could find its way to Lake Michigan

from the Chicago River when it is at flood stages which occurs many times during the year, and such flood stage run-off of the Chicago River drainage area is 600,000 cubic feet of water per minute; and also so that the sewage thus diverted into the Chicago River and to the Desplaines and Illinois Rivers will be diluted and free from nuisance or from danger of injury or impairment to [fol. 253] the public health and fish life in the Desplaines and Illinois Rivers.

(18) Because the Act of Congress of March 2, 1827, entitled "An Act to grant a quantity of land to the State of Illinois for the purpose of aiding in opening a canal to connect the waters of the Illinois River with those of Lake Michigan," granting among other things to the State certain land to aid the State in opening a canal to unite the waters of the Illinois River with those of Lake Michigan, authorized and empowered the State of Illinois directly or through any municipal agency to divert and abstract from Lake Michigan water to the extent of 600,000 cubic feet per minute as provided and proposed by defendant's works constructed, operated and maintained, and, as appears by the record, defendant in constructing and operating said works has been and is so acting under authority of the State expressly granted by Congress.

(19) Because, as appears by the record, the State immediately commenced to exercise the authority granted by said Act of Congress of March 2, 1827, and built a canal whereby water of Lake Michigan was diverted for the purpose of its operation; and thereafter enlarged said canal for navigation purposes, diverting a greater amount of water from Lake Michigan for such purposes; and thereafter in further exercise of said power and authority, created the defendant and caused it to build a canal of greater dimensions in depth and width than the original canal, to replace the old one called the Illinois and Michigan Canal, which new canal was designed to and does abstract water to the amount of 600,000 cubic feet per minute for navigation as well as sanitary purposes; and has replaced for all navigation purposes the old Illinois-Michigan Canal between Joliet and Chicago, and has further united the waters of the Illinois River with those of Lake Michigan; and the said canal built and maintained by defendant as aforesaid is one of the navigable waters of the United States connecting various other navigable waters.

(20) Because the said Main Channel and defendant's other diversion works were built and are maintained and operated under the authority of the State of Illinois as expressly authorized by said Act of Congress of March 2, 1827.

(21) Because the State of Illinois by merely constructing the old Illinois-Michigan Canal did not exhaust its power and authority under said Act of March 2, 1827, but had the further power and authority under said Act to create the Sanitary District of Chicago and provide that it should build and construct said canal and diversion works to abstract and divert from Lake Michigan up to 600,000 cubic feet of water per minute, and in excess of 250,000

cubic feet per minute for navigation on said canal, Desplaines and Illinois Rivers, and for purposes of protecting the health and lives of part of the people of the State.

(22) Because, as appears by the record, the United States during the course of the enlargement of the old Illinois-Michigan Canal and the replacement thereof by the defendant as aforesaid through Congress and its executive officers not only acquiesced in the enlargement of said Illinois-Michigan Canal and the construction of the canal built and operated by the Sanitary District of Chicago requiring the diversion of water from Lake Michigan to the amount of 600,000 cubic feet per minute for navigation and sanitary purposes, [fol. 255] but also invited such enlargement of said Illinois-Michigan Canal and the construction and operation of said canal of the defendant to divert from Lake Michigan an amount of water ultimately equal to 600,000 cubic feet per minute.

(23) Because, as appears by the record, the Secretary of War and Congress through the Secretary of War transmitting annual report of the Chief of Engineers of the United States Army, had full and complete knowledge of the passage of the Act of the General Assembly of the State of Illinois of May 29, 1889, expressly providing for the construction of the Main Channel and diversion works of the defendant and the abstraction of water from Lake Michigan to the ultimate amount of 600,000 cubic feet per minute; and they also had knowledge by the same means of the commencement immediately thereafter of the construction of such works, the progress of the construction, and their completion on or about the year 1898, which said diversion works so provided to be constructed and constructed during said period could only be operated for the purposes intended, with a diversion and abstraction of water from Lake Michigan to the ultimate amount of 600,000 cubic feet per minute; and Congress has not only not legislated in any manner to interfere with the operation of said works of defendant but, on the contrary, has passed many Acts indicating its recognition of said diversion to the ultimate amount of water mentioned.

(24) Because, as appears by the record, Congress has by Acts passed fixed project depths for substantially all the harbors and [fol. 256] connecting waters of Lakes Superior, Michigan, Huron, Erie and Ontario since the completion and commencement of the operation of the defendant's diversion works and the diversion of water to the ultimate amount of 600,000 cubic feet per minute, and said project depths in said harbors and connecting waters have at all times existed and have always been the depths of waters in said harbors and connecting waters so provided by Congress, notwithstanding the claimed lowering of the elevations of the surface of Lakes Michigan, Huron, Erie and Ontario and their connecting waters by said abstraction to said ultimate amount of 600,000 cubic feet per minute.

(25) Because Congress under the Commerce Clause of the Constitution has power for the improvement of navigation to improve the

harbors, connecting channels and waters of the Great Lakes by deepening such channels and harbors or otherwise improving same and by fixing the depth of water that shall be provided in said harbors and channels through such improvement of navigation; and, as appears by the record, in the exercise of such power Congress has so fixed said project depths; and, as it further appears by the record, at no time has the actual depth of water in such channels and harbors been less than the project depths so fixed by said Acts of Congress, and the diversion of water from Lake Michigan has not to the ultimate amount above mentioned impaired or lessened said depths or caused the depth of water to be less than the project depths so fixed by Congress.

(26) Because, as appears by the record, the cost and financial burden to defendant of building works which would approach the [fol. 257] proper protection of the water supply of the people within the territorial limits of the defendant, to take the place of the diversion in excess of 250,000 cubic feet per minute and up to 600,000 cubic feet per minute, would be, including increased cost of operation, upwards of \$250,000,000., whereas the damage to plaintiff claimed by reason of the alleged injury to navigation by such diversion is slight.

(27) Because, as appears by the record, all the claimed damage to navigation by the diversion made and proposed by defendant can be offset or compensated for by the construction of works whose cost would not exceed \$475,000.

(28) Because it is an uncontroverted fact, as appears by the record, that submerged weirs or dams may be constructed in the St. Clair and Niagara Rivers under the authority of the United States at a cost estimated by the United States Army Engineers to be not in excess of \$475,000, which will have the effect of raising the surface elevations of the waters of Lake Michigan, Lake Huron and Lake Erie and their connecting waters to an amount equal to the alleged lowering of the surface elevations of said Lakes and their connecting waters by the diversion of water from Lake Michigan by defendant to the amount of 600,000 cubic feet per minute, and pursuant to the Rivers and Harbors Act of Congress of June 25, 1910, a report was made to Congress by the commission thereunder appointed, approved by the Secretary of War, recommending that such works be constructed, providing the State of Illinois or some agency of the State should provide the funds therefor, and as it further appears by the record the construction of the Gut dam in the Galops [fol. 258] rapids has already caused surface elevation of the water of Lake Ontario to be raised an amount equal to the claimed lowering due to defendant's diversion.

(29) Because, as appears by the record, the defendant in this case has offered, pursuant to ordinance of its Board of Trustees, to pay not only the cost of the construction, but also the maintenance of any works that may be provided by the authority of the United States to offset or compensate for alleged lowering of the surface

elevations of waters of the Great Lakes system due to the diversion of water from Lake Michigan to the amount of 600,000 cubic feet per minute.

(30) Because, as appears by the record, the defendant presented said offer by a motion and asked that the defendant be not enjoined from taking an amount of water less than 600,000 cubic feet per minute, on condition that the defendant be decreed to pay such cost, and the Court by order denied said motion.

(31) Because Congress by the Rivers and Harbors Act of March 3, 1899, March 2, 1907, and June 25, 1910, provided and appropriated for survey and estimate of costs of waterway from and connecting with the southern terminus of the Sanitary District's diversion canal replacing the Illinois-Michigan Canal along the Desplaines and Illinois Rivers, which said proposed waterway for which survey and estimate of cost was made under said Acts contemplated the use of water from Lake Michigan diverted by the Sanitary District to the amount of 600,000 cubic feet per minute.

(32) Because by Acts of Congress of March 3, 1909, June 25, 1910, August 24, 1912, and June 30, 1917, providing for the in-[fol. 259] vestigation and report upon the best means of compensating for the lowering of the surface elevations of the Great Lakes and their connecting waters, due not only to the alleged diversion of water by the defendant to the amount of 600,000 cubic feet per minute, but also to diversions from other sources, Congress has expressly indicated its recognition of such diversions as existing lawful diversions and necessary to be continued, and Congress thereby proposes in connection therewith to take means by which the alleged or claimed injury to navigation may be taken care of without impairing the usefulness of said diversion works for the purposes for which they have been created and are being maintained.

(33) Because the Act of Congress of June 29, 1906, relating to the diversion of water from the Niagara River expressly states it shall not in any manner affect diversions for sanitary or domestic purposes, the diversion by defendant to 600,000 cubic feet per minute being the principal one for sanitary and domestic purposes, and said Act is in part as follows:

"That the diversion of water from Niagara River or its tributaries in the State of New York is hereby prohibited except with the consent of the Secretary of War as hereinafter authorized in Section 2 of this Act, provided that this prohibition shall not be interpreted as forbidding the diversion of the waters of the Great Lakes or of the Niagara River for sanitary or domestic purposes or for navigation, the amount of which may be fixed from time to time by the Congress of the United States or by the Secretary of War of the United States under its direction,"

and said Act expressly indicates that such diversions for sanitary or [fol. 260] domestic purposes from the Great Lakes was not, and

should not be limited except by future Acts of Congress or by the Secretary of War under some future Act or Acts.

(34) Because the construction of the works of Sanitary District of Chicago to divert from Lake Michigan an ultimate amount of 600,000 cubic feet of water per minute was authorized by law of the State of Illinois and was, therefore, works expressly recognized as valid by Section 10 of the Rivers and Harbors Act of Congress of September 19, 1890, wherein it was provided only "that the creation of my obstruction not affirmatively authorized by law to the navigable capacity of any waters in respect of which the United States has jurisdiction is hereby prohibited," and Section 10 of the Rivers and Harbors Act of March 3, 1899, providing "that the creation of any obstruction not affirmatively authorized by Congress to the navigable capacity of any waters of the United States is hereby prohibited", was not intended to affect obstructions theretofore constructed or created pursuant to Acts of the General Assembly of the State of Illinois under the exercise of police power.

(35) Because the Acts of Congress passed contemporaneously with, during and after the construction of the diversion works of the defendant to the amount of 600,000 cubic feet of water per minute indicate that it was and is not the intention of Congress that the Rivers and Harbors Act of March 3, 1899, and particularly Sections 9, 10 and 12 thereof, should authorize or empower the Secretary of War or the Chief of Engineers to in any way prohibit, modify or control the diversion of water from Lake Michigan by defendant through its various works to the ultimate amount of 600,000 cubic feet per minute.

(36) Because Sections 9 and 10 of the Rivers and Harbors Act of March 3, 1899, only authorize the Secretary of War acting in conjunction with the Chief of Engineers of the United States Army to grant or refuse a permit to build, construct or operate works affecting navigable waters of the United States.

(37) Because the Secretary of War under said Rivers and Harbors Act of March 3, 1899, Sections 9 and 10 thereof, is not authorized to control or in any manner supervise the operation of such works.

(38) Because, as appears by the record, on May 8, 1899, the Secretary of War acting in conjunction with the Chief of Engineers of the United States Army issued a permit to the defendant to open and operate its canal to divert water to the ultimate amount of 600,000 cubic feet per minute, and said permit was subject to the conditions that if Congress acted on the subject matter then the permit should be subject thereto, and also if at any time it should become apparent that the current in the Chicago River should be unreasonably obstructive to navigation then the Secretary of War might modify the amount of the diversion; and the Chicago River and its south branch and west fork was to and does furnish the connection between Lake Michigan and the northern terminus of defendant's

Main Channel extending from Chicago to Joliet, and thus the supply channel for the main channel of water from Lake Michigan, and said Chicago River and its south branch and west fork was [fol. 262] narrow, shallow and tortuous and thereby its flowage capacity was small; and by reason of the condition of the Chicago River and because of objections to the current therein as so expressly stated the Secretary of War attempted to modify or limit the diversion authorized under said permit of May 8, 1899, to 250,000 cubic feet per minute, which was done under a supposed permit dated May 5, 1901; and the defendant in view of such limitation of the amount of withdrawal and because of the shallowness and narrowness of the said Chicago River and its south branch and west fork thereof, made application to the Secretary of War for authority to increase the flowage capacity of the channel of said Chicago River and the south branch and west fork thereof by deepening it from its then depth of seventeen feet to the depth of twenty-six feet and widening at all points to two hundred feet for the purpose of providing an enlarged supply channel and the amount of water necessary for its Main Channel, so that the required amount of water to operate said diversion works taken through the Chicago River and the south branch and west fork thereof would not create a current in the channel of said rivers in excess of one and one-quarter mile per hour fixed by the Secretary of War; and said improvement of said Chicago River was made, as expressly stated in the application for permit therefor in order that the waters of Lake Michigan might be diverted to the amount of 600,000 cubic feet per minute, without creating a current in the Chicago River in excess of one and one-quarter miles per hour; and thereafter the defendant did improve the said Chicago River by deepening and widening it as above stated, at an expense of upwards of \$13,000,000; and there has not been, is, and will not be, any [fol. 263] current in the Chicago River in excess of a mile and a quarter an hour by reason of abstraction of water from Lake Michigan in excess of 250,000 cubic feet per minute and to the ultimate amount of 600,000; and the so-called limitation of flow attempted to be made by the Secretary of War under said supposed permit of May 5, 1901, has ceased to have any force or effect, as the reason therefor has been removed.

(39) Because the Secretary of War and the Attorney General of the United States, in causing the institution of this suit and the filing of the complaint herein, and the prosecution of the said suit, have taken an unreasonable and arbitrary course and have thereby arbitrarily sought to enforce the provisions of the so-called permit of May 5, 1901, limiting the abstraction and withdrawal to 250,000 cubic feet of water per minute from Lake Michigan, when said limitation of flow was made solely because of the current in the Chicago River and the United States has not sought in this suit by its complaint to base its right to an injunction upon the conditions of navigation on the Chicago River but solely upon the condition of navigation on the Great Lakes, their connecting waters and harbors other than the Chicago River and its harbor.

(40) Because, as appears by the record, the Secretary of War has authorized the withdrawal of water from Lake Michigan to the amount of 600,000 cubic feet of water per minute and any limitation of withdrawal thereafter made under the conditions of the original permit of May 8, 1899, has ceased to have any force or effect, as [fol. 264] the express reason for such limitation of withdrawal has been removed by the defendant's constructing works and making improvements in the Chicago River and south branch and west fork thereof pursuant to the permit of the Secretary of War and for the purpose of removing the reason for such limitation of the amount of withdrawal.

(41) Because, as appears by the record, the abstraction and withdrawal of water from Lake Michigan to the amount of 600,000 cubic feet per minute has not and will not impair the navigable capacity of any of the navigable waters of the United States.

(42) Because, as appears by the record, the abstraction and withdrawal of water from Lake Michigan by the defendant to the amount of 600,000 cubic feet of water per minute has not and will not substantially impair or affect the navigable capacity of any of the navigable waters of the United States.

(43) Because, as appears by the record, no effect of such withdrawal or abstraction of water has been observed.

(44) Because, as appears by the record, no lay witness or navigator or captain of any ship or any one engaged in navigation upon the Great Lakes has testified as to any effect upon the navigable capacity of any of the harbors or connecting waters of the Great Lakes by the diversion of water by the defendant to the amount of 600,000 cubic feet per minute.

(45) Because, as appears by the record, the only basis upon which [fol. 235] plaintiff sought the injunctive decree or upon which the injunctive decree was or could be based was the testimony of expert witnesses and analyses made by them.

(46) Because, as appears by the record, the injunctive decree herein is only based upon the analyses of expert witnesses.

(47) Because, as it appears from the record, the evidence herein does not show that the surface elevations of the waters of the Great Lakes or their harbors, or connecting channels, or any of such waters, have been or will be lowered or affected in any manner by the diversion of water at Chicago.

(48) Because, as it appears from the record, the evidence herein does not show that the surface elevations of the waters of the Great Lakes or their harbors, or connecting channels, or any of such waters, have been materially or substantially lowered, or have been materially or substantially affected by the diversion of water at Chicago.

(49) Because, as appears by the record, the injury and damage to the defendant resulting from and by reason of the injunctive de-

cree entered herein will be financially great, whereas the benefit to the plaintiff resulting from and by reason of said decree will be slight.

(50) Because, as appears by the record, it will be impossible for [fol. 266] the defendant to provide adequate means to protect the water supply of the people of Chicago and within the territorial limits of the defendant with the diversion of water from Lake Michigan reduced to 250,000 cubic feet per minute, whereas the benefit to navigation upon the Great Lakes, their harbors and connecting waters, will be slight and scarcely appreciable.

(51) Because, as appears from the record, the defendant could not observe the injunction granted by said decree of June 18, 1923, without causing contamination of the drinking water supply of a population of upwards of 3,000,000 people within the territorial limits of the defendant, which contamination of drinking water supply would cause epidemics of typhoid fever and other water-borne diseases.

(52) Because, as appears from the record, the said injunctive decree entered herein in effect holds unconstitutional the Act of the General Assembly of the State of Illinois of May 29, 1889, wherein the defendant is directed to withdraw from Lake Michigan not less than 20,000 cubic feet of water per minute for each 100,000 of population within its territorial limits, which said act was passed under a power reserved to and in the State of Illinois under the Constitution.

(53) Because, as appears from the record, the Rivers and Harbors Act of June 13, 1902, Section 4 thereof, provided that the President of the United States might invite the Government of Great Britain to join in the formation of an International Commission to [fol. 267] be composed of three members from the United States and three who should represent the interests of the Dominion of Canada, whose duties should be to investigate and report on conditions and uses of the waters adjacent to the boundary line between the United States and Canada, upon the maintenance and regulation of suitable levels, the effect of diversions therefrom and the necessary measures to regulate such diversions; and, it was further provided, that the Commission should make recommendations as to the terms of a treaty concerning said boundary waters; and said Commission, known as International Waterways Commission, contemplated by said Act, was thereafter formed in the manner described; and the said Commission made special investigation of the diversion of water by the defendant, the amount thereof, the necessities for same, and recommended that the diversion of 600,000 cubic feet per minute by defendant should not be disturbed; and the said International Waterways Commission made an investigation of the uses of the waters of the Great Lakes, the priority of the different uses and what use should take precedence of all other uses, and found that the use of said waters for sanitary and domestic purposes should take precedence of all other uses, including use for navigation; and the said

International Waterways Commission also made reports and recommendations concerning the terms of the treaty with reference to boundary waters made January 11, 1909, and by said treaty it was provided that existing uses of water should not be disturbed; that use for domestic and sanitary purposes should take precedence of all other uses; that at Niagara Falls there might be diverted 36,000 cubic seconds feet of water on the Canadian side and on the American side 20,000 cubic seconds feet, and such difference was due principally [fol. 268] to the fact that the United States was charged with 10,000 cubic seconds feet, or 600,000 cubic minutes feet, diversion by defendant.

(54) Because, as appears from the record, the treaty between the United States and Great Britain of January 11, 1909, relating to and concerning the boundary waters between the United States and Canada expressly recognizes and authorizes the diversion by the defendant to the amount of 600,000 cubic feet per minute from Lake Michigan and the Great Lakes System.

(55) Because, as appears from the record, the treaty of January 11, 1909, precludes the plaintiff's obtaining an injunction with reference to withdrawal of water from Lake Michigan by defendant as to any amount less than 600,000 cubic feet per minute.

(56) Because the Court should have granted and allowed the motion presented on July 12, 1920, containing the offer of defendant to defray the cost of constructing and maintaining any compensating works the United States might determine to build to offset for the alleged lowering of the surfaces of the Great Lakes and their connecting channels and harbors, and should have entered a decree only enjoining the defendant from diverting water from Lake Michigan in excess of 600,000 cubic feet per minute on condition that such cost of constructing and maintaining said works should be paid when demanded by the plaintiff.

(57) Because it does not appear from the record that the diversion of water from Lake Michigan to the amount of 600,000 cubic feet per minute is under all the facts and circumstances an unreasonable obstruction to navigation.

[fol. 269] (58) Because, as appears from the record, the decree herein in effect permits the Secretary of War and the Attorney General to pursue an unreasonable and arbitrary course with reference to the defendant's diversion of water from Lake Michigan.

(59) Because, as appears from the record, the Court should have balanced the equities and entered a decree which would do complete justice between the parties, and should have refused to enter the injunctive decree herein causing unreasonable damage and injury to the defendant.

(60) Because, as appears from the record, the plaintiff did not show that the abstraction of water from Lake Michigan by the de-

defendant to the amount of 600,000 cubic feet per minute under all the circumstances would amount to an unreasonable obstruction to navigation, having consideration for not only the effect upon navigation but also the purpose of the withdrawal—the public benefit inuring to the people as compared to injury to or interference with navigation.

(61) Because Congress will not be deemed to have acted concerning a matter of local regulation such as is embraced in the Act of the General Assembly of Illinois of May 29, 1889, providing for the construction and operation of defendant's diversion works unless it has passed a special law with reference to the particular alleged obstruction or regulation.

[fol. 270] (62) Because, as appears from the record, the plaintiff is estopped or is in no position to assert that the works of the defendant were erected and were operated, and are being operated, without authority or constitute a nuisance; and when the United States comes in to a court of equity it stands in no different position than any other plaintiff in equity.

Wherefore, the defendant, the Sanitary District of Chicago, prays that said decree of the District Court of the United States, for the Northern District of Illinois, Eastern Division, be reversed, and that the said District Court of the United States, for the Northern District of Illinois, Eastern Division, may be directed to enter a decree dissolving and vacating the injunction granted by it on said June 18, 1923.

The Sanitary District of Chicago, by Clyde L. Day, Edmund D. Adcock, Its Solicitors.

[File endorsement omitted.]

[fols. 271 & 271½] [File endorsement omitted.]

[fol. 272] IN THE DISTRICT COURT OF THE UNITED STATES FOR THE
NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

ORDER ALLOWING APPEAL

Considering the petition for appeal of the defendant, the Sanitary District of Chicago, this day presented.

It is ordered that an appeal be allowed to said defendant herein from the decree of June 18, 1923, rendered against said defendant in the above entitled and numbered cause, and that said appeal shall be returnable to the Supreme Court of the United States, and that, upon the execution, filing and approval of a bond in the penal sum of Five Thousand Dollars (\$5,000), said appeal shall operate as a

supersedeas of said decree and shall suspend during the pendency of said appeal, the effect and operation of the injunction herein.

Enter.

Carpenter, Judge. 29th June, 1923.

[fols. 273 & 274] [File endorsement omitted.]

[fol. 275] IN THE DISTRICT COURT OF THE UNITED STATES FOR THE
NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

ORDER RE TRANSCRIPT OF EVIDENCE

This cause came on at this term and was argued by counsel, and thereupon, upon consideration thereof, it was ordered, adjudged and decreed, as follows:

(1) The evidence taken in this cause in the exact words of the witnesses as it appears in certain printed bound volumes numbered 1 to 7, including also typewritten transcript of evidence taken on, to wit, April 25th and 26th, 1923, together with exhibits, is practically impossible to put into narrative form which will disclose the vital merits of the cause. Said evidence is in printed form and consists principally of statements and evidence of expert witnesses whose testimony appearing in the record cannot be materially condensed, and of documentary evidence, which in the form they now appear in the record, are sufficiently condensed.

(2) The said evidence shall be set out in the exact words of the witnesses as it appears in the said printed documents and in the said typewritten testimony taken on April 25th and 26th, 1923, and the said seven printed volumes which are identified by the signature of the Clerk of the Court on the title page of each of said volumes numbered from 1 to 7, inclusive, and entitled on the back thereof "United States of America vs. Sanitary District of Chicago—Record," including said typewritten transcript taken April 25th and 26th, 1923, identified by the Clerk's signature, shall be incorporated [fol. 276] in the transcript of record on the appeal of said cause.

Enter.

Carpenter, Judge. 29th June, 1923.

[fol. 277] [File endorsement omitted.]

[fols. 278-281] BOND ON APPEAL FOR \$5,000—Approved to Operate
as a Supersedeas and Filed June 29, 1923

[fol. 282] IN THE UNITED STATES DISTRICT COURT FOR THE NORTH-
ERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

ORDER RE TRANSCRIPT OF EVIDENCE

This cause came on to be further heard at this term and was argued by counsel, and thereupon, upon consideration thereof, it was ordered, adjudged and decreed, as follows:

(1) The testimony of all witnesses herein and various documentary evidence and exhibits was taken, offered or introduced, and the objections and exceptions to said evidence or testimony were made before Samuel M. Morgan, heretofore appointed as Commissioner to take and transcribe said testimony and evidence, and a transcript of all of said testimony and evidence before said Commissioner has been filed by him in this Court and certain other documentary evidence, offered, introduced or presented has been filed herein pursuant to stipulation of counsel, and all of said testimony and evidence offered, introduced or presented in the manner aforesaid, prior to February 15, 1915, has been printed and consists of seven printed volumes, including exhibits, which said seven volumes, including exhibits, is a correct and true copy as is agreed [fol. 283] by counsel for both parties of all of said testimony, evidence or exhibits offered, introduced and filed prior to said February 15, 1915, which said volumes are now here in open court and for identification bear the signature on the initial page of each volume of the clerk of this Court.

(2) The said printed volumes above described and identified as aforesaid, shall be treated and accepted in all respects the same as the original documents or depositions taken and filed prior to said February 15, 1915, and said printed volumes shall be substituted for said typewritten transcript of said testimony and evidence and stipulations as to facts, and shall be the record thereof, and said printed volumes so identified shall be filed by the Clerk of this Court for the purposes aforesaid.

Enter.

Carpenter, Judge. 29th June, 1923.

[fols. 284 & 285] [File endorsement omitted.]

[fol. 286] IN THE DISTRICT COURT OF THE UNITED STATES FOR THE
NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

ORDER EXTENDING TIME

The parties in the above entitled cause appearing here in open court by their respective solicitors, and for satisfactory reasons appearing to the Court, the time for filing the record in this cause in the Supreme Court of the United States pursuant to the appeal sued out is hereby extended until and including the 20th day of September, A. D. 1923.

Enter.

Carpenter, Judge of said Court. 29th June, 1923.

[fols. 286½ & 287] [File endorsement omitted.]

[fols. 288-290] IN THE DISTRICT COURT OF THE UNITED STATES FOR
THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

Consolidated Cause No. 114.

UNITED STATES OF AMERICA

VS.

SANITARY DISTRICT OF CHICAGO

STIPULATION AS TO INCORPORATING ORIGINAL CERTIFICATE OF EVIDENCE IN THE TRANSCRIPT OF RECORD IN PLACE OF A COPY THEREOF—Filed June 29, 1923

It is hereby stipulated and agreed, by and between the parties hereto, represented by their respective solicitors, that the original certificate of evidence filed herein may be incorporated as a part of the transcript of record to be filed with the Clerk of the United States Supreme Court pursuant to the appeal herein, in place of a copy of said certificate of evidence.

Edwin A. Olson, United States Attorney; Joseph B. Fleming,
Special Assistant Attorney General, Solicitors for Plaintiff.
Clyde L. Day, Edmund D. Adcock, Solicitors for Defendant.

[File endorsement omitted.]

[fol. 291] IN THE DISTRICT COURT OF THE UNITED STATES FOR THE
NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

Certificate of Evidence—Filed June 29, 1923

Be it remembered and certified, that on the hearing of this cause, the same being originally cause number 29019 and equity number 114, upon the said respective bills of complaint and answers, the following evidence was introduced by the parties hereto, to wit—the evidence as contained in the printed and bound volumes numbered 1 to 7, respectively, marked on the back thereof “United States of America vs. Sanitary District—Record,” further identified by the signature of the Clerk of the Court on the title page of each of said seven volumes, and including typewritten testimony taken before the Commissioner on April 25th and 26th, 1923, entitled “United States of America vs. Sanitary District of Chicago,” also further identified by the signature of the Clerk of this Court on the first page of said testimony, and said printed volumes identified as aforesaid including the said typewritten volume, are made a part hereof, the same as if attached hereto.

The following is a copy of the stenographic transcript of the opinion of Judge Landis delivered orally on June 19, 1920:

[fol. 292] OPINION OF JUDGE LANDIS IN SANITARY DISTRICT CASES

June 19, 1920.

I have sent for you gentlemen to dispose of the Sanitary District cases. Before taking up these cases, just a word about time and delay. Six years was spent after these cases were filed in taking testimony, and about six years has passed since the cases were submitted to me on briefs. The six years that was taken up while taking testimony was all necessary. The delay that has occurred since the matters have been submitted to me have been the result of the exercise of my judgment. First, that during the war period, in view of the international questions possible, I thought it was better that this matter should continue just as it was, and secondly, since the war I have deferred entering this order with the understanding that there was a possibility of a composition of differences here that would enable the questions to be permanently adjusted along lines which I have been told were suggested by the Sanitary District to the War Department and the Canadian Government. I have held the matter, however, as long as I think proper on that theory and shall enter an order.

The bills were filed under legislation authorizing the United States to receive the injunctive power of the court as against obstruction of navigable waters and impairment of the navigable capacity of navigable waters. The averments, so far as I need to deal with the averments here now, are that the Sanitary District proposes to take an

amount of water—is taking an amount of water—proposing to take more, the taking of which will result in such impairment and such obstruction. Specifically, the impairment complained of most im-[fol. 293] portant in my view, is the impairment of the navigable capacity of the Great Lakes, excepting Lake Superior. The theory of the bills is—the charge is that such impairment by the district as is charged in the bills, without the consent of the Federal authorities at Washington, which consent is authorized and provided for by the Federal legislation, as I said before, entitles the government to an injunction. The defense of the Sanitary District is, first, that there is no impairment and no obstruction, and primarily, secondly, if there is an impairment or an obstruction, that it is necessary for the sanitation of this great populative territory. An examination of the proofs on the question of whether there is an impairment or not, an obstruction or not, that is to say, whether the taking of this water is felt or not, leads me to the conclusion that there is a lowering of the surface of this lake. In making that statement I have in mind the variation of the lake levels, traditional variation of the lake levels, known to all men that know anything about it. All that time finding that there is a lowering of the lake level, yes. That the taking of this vast volume of water each minute of each hour of each day of each month of each year continued unceasingly, no evidence in this case discrediting the fact, and has entirely resulted in the lowering of the level of the lake, and has resulted in changing the current of the Chicago River and reversing the current of the Chicago River. Now that the variation is only a matter of inches in the level of Lake Michigan, it is without doubt in my judgment, on the evidence in the matter, a matter of inches, and being a matter of inches, even though it be no more than three or four, having in mind the state of proof as to the depth of the harbors in the Great Lakes, [fol. 294] it is directly an impairment of navigable capacity, and by leaving the bottom of the harbors that much closer, the water is the creation of an obstruction to the navigable waters of the United States; in other words, the question of fact—whether there is an impairment or obstruction here, are beyond controversy and beyond question, but the fact is clearly established that there is such a change in this lake level, in my judgment, so that in low lake level time the level is lower and in high lake level time it is less than it would be but for this diversion.

Q. How many cubic feet per minute now?

A. Just at present I think about 8,500 per second. 480,000 cubic feet per minute, that is approximately. The diversion is 480,000 cubic feet per minute. The finding of the court is, on the evidence in this case, that that has resulted in the lowering of the lake level and the reversal of these currents, which latter fact is not controverted, and on the evidence in the case that the lowering is an impairment, as I said before, an impairment of navigable capacity, even though it amounts to no more than three or four inches, and as to the lowering to that extent there could be no controversy on the record, so on that fact the court's finding is against the contention

of the defendant on the proposition that this is a necessary thing for the salvation of this community, that is, without this water this community will be at the mercy of diseases and germs from which it suffered before this diversion began and from which it has by this diversion been practically relieved of, as shown by statistics. The court has complied with the rule of law, that navigable rights are [fol. 295] paramount, and even though the district is driven to the necessity of making some other provision, granting that the War Department and Congress should refuse to give that contention to this question of sanitation, it is entitled to the law which is in force in this room on me, which I must obey, that a navigable right is paramount, and that in the last analysis should Congress and the War Department in consideration of all these matters decline to permit the necessary diversion, the burden is on the District of providing some other method of relief; in other words, the defense that is necessary for the purposes of sanitation as against the rule that a navigable right and navigation right is a paramount right, is immaterial.

I had hoped, as I stated at the beginning, that there might be a composition of this thing. The Judge has no right to have personal feelings, but I live in this community, and it was my hope that there could be devised a program that would enable this district to have the benefit of this water, as much as it needs, that will give to the country this water in the solving of this problem of navigation.

There will be an order striking or sustaining the exceptions of the plaintiff, certain paragraphs of your answer setting up this sanitation defense. There will also be another sustaining the operation of this order which I am entering here this morning until 30 days after the Sanitary District has an opportunity to present to the Supreme Court of the United States an application for a supersedeas against high water, that is 30 days after the date fixed for the meeting of the Supreme Court in October. The order will not go into effect, it [fol. 296] will be suspended until 30 days after the Supreme Court meets in October. That is plenty of time, is it not? A. Yes, sir. I think that is plenty of time. I have considered that is enough. I wanted to make no mistake. You can form it in a way so that you will have a final order to appeal from. You have got to have that in mind. You may draw an order effective 30 days after the Spureme Court meets.

I omitted to mention one matter here which is not important, except the control of the Federal Government over this question has been recognized from the beginning by the Sanitary District itself before the diversion began and continuously down until what was that year when they attached that order, 1909? A. I think 1907 or 1908.

From the beginning, prior to the beginning of the diversion and down to 1907 or 1908, the constant attitude of the Sanitary District was a recognition of the control of the Federal Government over this whole question, everything that was done by the Sanitary Dis-

strict in the way of diversion being in a permit granted by the War Department on application of the Sanitary District to that end. The Sanitary District shall have an opportunity to apply for further relief to the War Department at Washington. Under no circumstances does this order go into effect now. Make that 60 days, and you may put in it, if it does not destroy the appealability of the order, you may put in a provision retaining me in control. The thing that the Government wants, at least the court wants, being a citizen of Chicago, the thing I want is water without microbes. That is why I have held your lawsuit.

[fol. 297] The following is motion presented on July 12, 1920, and filed herein:

[fol. 298] IN THE DISTRICT COURT OF THE UNITED STATES FOR
THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DI-
VISION

C. C. No. 29019 and Equity No. 114

UNITED STATES OF AMERICA, Complainant,

vs.

THE SANITARY DISTRICT OF CHICAGO, Defendant.

MOTION FOR RECONSIDERATION OF ORAL OPINION AND ORAL DIREC-
TION OF THE COURT CONCERNING THE FORM OF DECREE IN SAID
TWO CAUSES, TOGETHER WITH GROUNDS OF SAID MOTION

C. Arch Williams, Attorney for Defendant. Edmund D. Adcock,
of Counsel.

[fol. 299]

[Title omitted]

Now comes The Sanitary District of Chicago, defendant, in said two causes, by C. Arch Williams and Edmund D. Adcock, its attorneys, and moves the court that it reconsider its oral opinion and oral direction heretofore announced concerning the form of decree to be entered in the said causes, and that the court direct that The Sanitary District of Chicago, defendant, be enjoined, only, from withdrawing or diverting from Lake Michigan, through its various works now constructed or under construction, more than ten thousand cubic feet of water per second from Lake Michigan on condition that if the Congress of the United States, or other competent [fol. 300] governmental authority, provides for the construction of, in the St. Clair, Niagara or St. Lawrence rivers, or in one or all of them, works to compensate for any diminishing levels of the Great Lakes and connecting waters, due to the diversion or with-

drawal of ten thousand cubic feet of water per second from Lake Michigan by The Sanitary District of Chicago, then The Sanitary District of Chicago shall defray the expense and pay the cost of the construction and maintenance of any such works upon request therefor by the United States of America. In connection with said motion, and as a part thereof, the defendant hereby offers and agrees to defray the expense or pay to the United States upon demand the cost of the construction and maintenance of the works of the character above described in accordance with an ordinance of the Board of Trustees of The Sanitary District of Chicago passed and approved by said Board on the 8th day of July, A. D. 1920, a copy of which said ordinance is hereto attached and marked Exhibit "A," a certified copy of which is here ready to be produced in court. In support of said motion, and as grounds therefor, the defendant alleges and shows the following:

(1) The first of said suits was instituted in the Circuit Court of the United States for the Northern District of Illinois, Eastern Division, in the year 1908 and particularly seeks to enjoin the construction and operation of the Calumet Sag Channel, then and now under construction, through which channel it was and is proposed to divert approximately two thousand cubic feet of water per second from Lake Michigan into the main channel of said district at Sag, [fol. 301] Illinois. The second of said suits was instituted in the District Court of the United States, for the Northern District of Illinois, Eastern Division, on October 6, 1913, by bill of complaint filed on said date wherein it was prayed that The Sanitary District be enjoined and restrained

"from diverting or abstracting any waters from Lake Michigan over and above and in excess of two hundred and fifty thousand cubic feet of water per minute, as already authorized by said Secretary of War * * *."

The said suit instituted in the said District Court therefore sought to enjoin the abstraction of waters by the District, not only through the main channel, but also through or by means of any other works then constructed, under construction, or to be constructed. The latter suit, therefore, embraces and covers the subject matter of the first suit. It was agreed by stipulation that any evidence introduced in any one of the said suits that would be material in the other might be used by either party.

(2) The ground upon which the complainant sought injunction, as shown by the evidence and the allegations of said bill of complaint, was that the diversion of water in excess of two hundred and fifty thousand cubic feet per minute, or four thousand one hundred sixty-seven cubic feet per second, would lower the levels of the Great Lakes and connecting waters, thereby injuring navigation and changing the navigable capacity of the navigable waters of the United States.

(3) It is an admitted and undisputed fact on the record in said causes that works may be installed in the St. Clair, Niagara and St. Lawrence rivers which will compensate for the lowering of the lake [fol. 302] levels due to a diversion at Chicago of ten thousand cubic feet of water per second. Witnesses for both the United States and The Sanitary District in said causes so testified. There was introduced in evidence in said cause a document entitled "Final Report Waterway from Lockport, Illinois, to the Mouth of the Illinois River, H. R. Document No. 762, Sixty-third Congress, Second Session." The said report was made pursuant to the River and Harbor Act of Congress of June 25, 1910, which provided:

"The Secretary of War shall appoint a board of five members, to be composed of four engineer officers of the army and one civil engineer, taken from civil life. * * * Said Board shall report upon * * * such measures as may be required to properly preserve the levels of the Great Lakes and to compensate, as far as practicable for the diminishing level in said lakes and the connecting waters thereof by reason of any diversion of water from Lake Michigan for the maintenance of the proposed waterway herein described, or diversion for any other purpose."

The Board of Engineers, provided for by said Act of Congress, so appointed, made an investigation and its report was submitted to the Board of Engineers for Rivers and Harbors on August 15, 1913. The Board of Engineers for Rivers and Harbors report, reviewing the report of the special board, is dated December 16, 1913. It is signed by General William M. Black, then senior member of the Board, who was later and for a number of years Chief of Engineers of the United States army. Concerning the Chicago diversion, the Board of Engineers for Rivers and Harbors, in its report stated:

"Further, the Board believes that the total volume of water to be [fol. 303] diverted from the natural discharge channels of the lakes should be definitely fixed by Congress; that a project with estimate of cost for works necessary to compensate for such diversion should be prepared to the satisfaction of the Chief of Engineers, and the Secretary of War; that before any diversion is made beyond that at present existing, the State of Illinois shall transfer to the Secretary of War the funds necessary for such works as given by approved estimate of cost that the work shall be built by the United States with the funds so provided and that the control and maintenance of such works shall be in and at the cost of the United States."

The Special Board's report upon the subject of compensating for diminished or diminishing lake levels is as follows:

"To restore the diminished levels in the lakes by constructing contracting works in their outlets does not however present any serious difficulties. A careful discussion of the proper locations and dimensions of such works is also given in Appendix A.

At the foot of Lake Ontario the closure of the Gut channel of the Galops Rapids by the Canadian Government has had the effect

of raising the level of Lake Ontario an amount nearly equal to the computed lowering of the lake by a diversion of 10,000 second feet at Chicago, and no compensation is at present deemed necessary to restore former conditions in this lake.

In Appendix A it is proposed to diminish the outflow of Lake Erie by the construction of three submerged weirs in Niagara River in the vicinity of Squaw Island, which would average about 4.2 feet in height and would contain about 15,000 cubic yards of masonry. The estimated cost is \$150,000.

To raise the level of Lakes Michigan and Huron submerged weirs [fol. 304] are proposed in St. Clair River, covering 3 miles of river below the mouth of Black River at Port Huron. The weirs as suggested in Appendix A have a height of from 5 to 6 feet above the river bed, contain about 65,000 cubic yards of material, and their estimated cost is \$325,000. It is computed that these weirs will increase the velocity of the water flowing over them slightly (from a mean of 3.28 feet to 3.89 feet per second), but, on the other hand, above the mouth of Black River the river slopes and velocities which are now excessive will be diminished, and navigation on the whole will be considerably benefited.

The Chicago diversion has no effect on Lake Superior.

Compensation for the loss of elevation on Lakes Michigan, Huron and Erie, and their connecting waters, due to an assumed diversion from Lake Michigan of 10,000 second feet, will by the plan above outlined involve an expenditure of about \$475,000, to which should be added an amount for the maintenance of the weirs, estimated at about \$15,000 per year, the total cost being much less than the cost of restoration of depths by dredging. It is the opinion of the board that while other plans have been proposed compensation by fixed contraction works similar in general to those above described affords the cheapest and most satisfactory method of preserving the levels of the Great Lakes."

Said report is signed by W. H. Bixby, Brigadier General, U. S. Army, retired, President of the Board; O. McD. Townsend, Colonel, Corps of Engineers, U. S. Army; C. Keller, Major, Corps of Engineers, U. S. Army; J. B. Cavanaugh, Major, Corps of Engineers, U. S. Army; and John Bogart, Civil Engineer.

The Appendix A to said report is signed by C. Keller, Major, Corps [fol. 305] of Engineers, and is dated August 13, 1913. Concerning construction and effect of compensating works, Col. Keller states in his report as follows:

"The loss of depth on Lake Ontario, due to a diversion of 10,000 second-feet, would be 0.431 foot, or 5.2 inches. The closure of the Gut Channel of the Galops Rapids by the Canadian Government in 1903 has had the effect of raising the level of Lake Ontario by about the same amount. No further compensation is therefore at present necessary on Lake Ontario to restore its natural levels. The head of Galops Rapids will probably afford an advantageous site for a submerged dam or weir to obstruct further the area of the channel through which Lake Ontario discharges, and no great

engineering difficulty should be experienced in securing any reasonable increase of level on this lake, but storage in this lake would, temporarily at least, diminish depths in the St. Lawrence River. * * *

For the channels and lakes from the foot of Lake Erie to the St. Marys Locks, so far as affected by the Chicago diversion, a plan of compensation seems feasible which will not disturb natural conditions.

To compensate for the reduction of level in Lake Erie, the outflow capacity of the Niagara River must be diminished. By building submerged weirs or contraction works a short distance below its head, this may be done without altering the range and the periods of the natural oscillations of the lake. At the same time, the free flow down the Niagara River will remain practically unchanged. A proper location of the weirs, which will be of moderate height, or of the contracting dikes will not increase the danger of ice gorges in the upper Niagara River. * * *

It is known that when the surface of Lake Erie is elevated there [fol. 306] will be some backwater effect on Lakes Michigan and Huron, estimated to be slightly more than one-third the rise of Lake Erie. Assuming the surface of Lake Erie raised 0.45 foot, it is estimated that the backwater rise of Lakes Michigan and Huron may be as much as 0.16. A diversion of 10,000 second-feet at Chicago would lower Lakes Michigan and Huron 0.47 foot, and the difference between this and the above backwater effect, or 0.31 foot, represents the additional amount which the surface of Lakes Michigan and Huron must be raised to compensate for such diversion. The St. Clair River is a main artery of the highly important lake traffic, and if submerged weirs are to be built in this river to raise the level of Lakes Michigan and Huron, sites must be chosen and the weirs built to such height that the depth over them will be ample and that navigation may remain convenient and unobstructed. The average depth of the St. Clair River for a considerable distance below the mouth of Black River at Port Huron is 30 feet, and six weirs may be built below that point, at distances averaging half a mile apart, which will raise the surface of Lakes Michigan and Huron the desired amount and will not reduce the depth over the weirs and elsewhere below 24 to 25 feet. The mean velocity of the current in this vicinity would be increased from about 3.28 feet to about 3.89 feet per second, or to about 2 $\frac{2}{3}$ miles per hour, and the effect of this increase would be felt over a distance of about 3 miles below the upper weir, while above it the river slopes and velocities, now excessive, will be diminished and navigation will be benefited. The weirs, located as above, should have a height of about 5 to 6 feet above the river bed, and six weirs would require about 65,000 cubic yards of stone, which, at \$5 per cubic yard, will cost about \$325,000. Contraction works in the same locality will, at higher cost, produce the same result, but they must, as previously noted, be restricted in height to mean stage. [fol. 307] The Chicago diversion, nor any from the lower lakes, will have no effect upon Lake Superior.

The plan of compensation herein proposed has the advantage of simplicity and relative economy. Moreover, the submerged weirs may be systematically and progressively built, so as to permit close observation of their effect and such changes in plan as experience gained during construction may suggest. On the other hand, the Niagara River weirs, so long as they exist, would certainly interfere with the navigation of the main channel of the Niagara River, and at some future time might thereby interfere with the deepening of the channel. Present navigation would, however, be sufficiently served by the new lock at Black Rock. A further minor criticism of the proposed Niagara River weirs is that they do not, as would a high weir close to Niagara Falls, prevent the power diversions at Niagara from slightly lowering the level of Lake Erie; but the weirs are designed to compensate for the effects of diversions from Lake Michigan only. The consideration of compensation for the effects of diversions from the Niagara River is not included in the board's duties, but such compensation could readily be provided by slight modification of the weirs proposed.

Compensation for the loss of elevation on Lakes Michigan, Huron and Erie and connecting waters, due to an assumed diversion from Lake Michigan of 10,000 second-feet will, by the plan above outlined, involve a total expenditure of at least \$475,000, to which must be added a small amount, possibly \$15,000, annually, for the maintenance of the remedial works. This volume of 10,000 cubic feet per second has been assumed merely as a basis for computation. The cost of compensation for a diversion of different volume may be determined in the same manner."

[fol. 308] 4. On June 30, 1917, the Congress of the United States by joint resolution authorized and directed the Secretary of War to

"Make a comprehensive and thorough investigation, including all necessary surveys and maps, of the entire subject of water diversion from the Great Lakes and Niagara River, including navigation, sanitary and power purposes, and the preservation of the scenic beauty of Niagara Falls and the rapids of Niagara River, and to report to Congress thereon at the earliest practicable date."

Accordingly, the Chief of Engineers, by direction of the Secretary of War, authorized the Division Engineer, Lakes Division (Col. J. G. Warren, Corps of Engineers, U. S. Army), to make and prepare a report upon all the diversions of the Great Lakes. This report was recently submitted to the Board of Engineers on Rivers and Harbors, and, on June 3, 1920, the said Board had a hearing concerning the subject matter of said report at Niagara Falls, New York. At said hearing, representatives of persons, firms and corporations diverting water from the Great Lakes were present, including representatives of the various power companies and interests using the water of the Niagara River at or near Niagara Falls to develop for sale, for commercial purposes, electricity. Representatives of The Sanitary District of Chicago were present as were those of organizations desiring

to protect the scenic beauty of Niagara Falls. The said report has not yet been printed and is in typewritten form, and it is understood there are only two copies in existence—one is located at the office [fol. 309] of the Division Engineer at Buffalo and another at the office of the Board of Engineers for Rivers and Harbors, at Washington, D. C. The report, however, has been examined by representatives of The Sanitary District and the substance of same, with reference to the Chicago diversion and compensation therefor, can be stated, and the defendant asks the opportunity, at such time as the court may direct, to offer said report, or portions thereof, in evidence. The said report found that there were many diversions of the waters of the Great Lakes which effected the lowering of lake levels, and particularly the level of Lake Erie—such as the diversions at Niagara for power purposes, the diversion of 4,500 cubic-seconds feet for power purposes through the Welland Canal and other diversions, including the Chicago diversion; that the Chicago diversion of 10,000 cubic feet per second would produce approximately 55 per cent of the entire lowering of Lake Erie. The report further finds that any diminished or diminishing levels of the lakes due to the Chicago diversion, or any other diversion, may be compensated for by the construction of works in the St. Clair and Niagara rivers of the character described in said report entitled "Final Report, Waterway from Lockport, Ill., to the Mouth of the Illinois River," or by the construction and operation of so-called "regulating works" in the Niagara River, which said works would consist of dams which may be moved at will to regulate the levels of Lake Erie. It was recommended that The Sanitary District be allowed and permitted to withdraw from Lake Michigan 10,000 cubic second-feet of water and that works to [fol. 310] compensate for any diminished or diminishing lake levels should be built at the expense of The Sanitary District.

5. The treaty between the United States and Great Britain of 1909, relating to Canadian boundary waters, provided that there may be diverted from the Niagara River above Niagara Falls, on the Canadian side, water to the extent of 36,000 cubic feet per second and on the American side 20,000 cubic feet of water per second. The reason that the United States was only permitted to divert 20,000 cubic second-feet as compared with the Canadian right of 36,000 second-feet was because the United States was charged with the diversion of 10,000 second-feet at Chicago. Canada, therefore, can make no objection. The International Waterways Commission was organized and appointed pursuant to the joint action of the Congress of the United States and the Parliament of Canada. Canada and the United States each appointed three members thereof. The purpose of the organization of the International Waterways Commission was, among other things, to recommend the form of a treaty between the United States and Great Britain concerning the Canadian boundary waters. On April 25, 1906, the Canadian section of the International Waterways Commission made a report to the Commissioner of Public Works of Canada, as follows (proceedings I. W. C., page 333):

"At Chicago the Americans had built a drainage canal which, when in full operation will use about 10,000 cubic feet of water per second.

The quantity of water required for the purposes of a ship canal is comparatively small, but the character of this drainage canal at [fol. 311] Chicago is such as to involve the continuous flow of water, which will have the effect of lowering Lake Michigan, by over 6 inches and Lake Erie by $4\frac{1}{2}$ inches. The nature of this work may be judged when we state that the expenditure will be over \$40,000,000 and that power works are in the course of construction on the canal which will generate some 30,000 H. P.

As the diversion from Lake Michigan to the Mississippi River is of a much more serious character than the temporary diversions from the Niagara River, it is felt that the amount of water taken on the American side of the Niagara River should be limited to 18,500 cubic feet per second. * * * It is exceedingly important in the interest of navigation, both to ourselves and the people of the United States, that the diversion by way of the Chicago drainage canal should be limited. * * * If our proposal is carried out, the diversions will be about as follows:

Diversions on the American Side

	Per second cubic feet
Niagara Falls.....	18,500
Chicago Drainage Canal.....	10,000
Total	<u>28,500</u>

Diversions on the Canadian Side

Niagara Falls and on the Niagara Peninsula.....36,000

It is quite apparent that no further diversion can be made on the Niagara River without injury to the scenic effect of the Falls as a whole, and there should be no further diversion from Lake Erie or any other of the waters of the Great Lakes system, which will be [fol. 312] injurious to navigation. Your Commission is, therefore, of opinion that the time has come when it is desirable to make a treaty limiting these diversions. * * * Therefore this Commission recommends that a treaty be had between the United States and Great Britain, in framing which, it should be recognized that * * *

Permanent or complete diversions of such waters are wrong in principal, and, therefore, should hereafter be absolutely prohibited. The diversions by the Chicago drainage canal should be limited to the use of not more than 10,000 cubic feet per second. * * * This would give an apparent advantage to Canadian interests, but as the diversion is not of serious injury to the Falls and does not materially affect the interests of navigation, it is more than counter-

balanced by the complete diversion of 10,000 cubic feet by way of the Chicago drainage canal to the Mississippi River.

On May 3, 1906, the International Waterways Commission, by report signed by all members, made a report as follows (proceedings I. C. W., 339):

"The Commission has made a thorough investigation of conditions existing at Niagara Falls and the two sections have presented reports to their respective governments setting forth these conditions, to which attention is invited. The following views and recommendations are based upon a careful study of the facts and conditions set forth in these reports. * * *

2. While the Commission are not fully agreed as to the effect of diversions of water from Niagara Falls, all are of the opinion that more than 36,000 cubic feet per second on the Canadian side of the Niagara River, or on the Niagara Peninsula, and 18,500 cubic feet per second on the American side of the Niagara River, including diversions for power purposes on the Erie Canal, cannot be diverted without injury to Niagara Falls as a whole.

[fol. 313] 3. The Commission, therefore, recommends that such diversions, inclusive of water required for domestic use or the service of locks in navigation canals, be limited on the Canadian side to 36,000 cubic feet per second, and on the United States side to 18,500 cubic feet per second (and in addition thereto, a diversion for sanitary purposes, not to exceed 10,000 cubic feet per second, be authorized for the Chicago drainage canal), and that a treaty or legislation be had limiting these diversions to the quantities mentioned.

The effect of the diversion of water by the Chicago drainage canal upon general navigation interests of the Great Lakes' system will be considered in a separate report. * * * The following principles are suggested * * *:

Permanent or complete diversions of navigable waters or their tributary streams should only be permitted for domestic purposes and for the use of locks in navigation canals."

On January 4, 1907, the International Waterways Commission made a special report, signed by all the members, entitled:

"The Chicago Drainage Canal—Joint Report of the International Waterways Commission."

Among other things in said report, the said Commission stated:

"There appears to be a tacit general agreement that Chicago needs, or will need about 10,000 cubic feet of water per second for sanitary purposes and that the city should have it without further question. * * * We therefore recommend that the government of the United States prohibit the diversion of more than 10,000 cubic feet per second for the Chicago drainage canal."

[fol. 314] After the evidence was presented in this case, the representatives of The Sanitary District succeeded in obtaining an inspection of the papers showing the negotiations between the United States and Great Britain, which led up to the treaty. The Secretary of State gave The Sanitary District copies of certain of the papers but would not allow copies of all the papers to be obtained. It appears that there was before the Secretary of State the various reports of the International Waterways Commission concerning the diversion of waters at Niagara Falls. The Secretary of State gave the Foreign Relations Committee of the United States Senate a memorandum concerning the treaty when it was before the Senate for ratification with reference to the diversion of waters at Niagara Falls and the diversion at Chicago. The said memorandum stated:

"The waters of Lake Michigan do not come within the definition of boundary waters, as defined in the preliminary article of the treaty, and it will be noted that in Article 1 of the treaty the waters of this lake are not included among the boundary waters of the Great Lakes system but are covered by special provision in the second paragraph of that article. * * * Attention is called to the express provision in this article that it shall not apply to cases already existing which would seem to cover, and was certainly intended to cover, the Canal system at Chicago. * * * The treaty, therefore, recognizes that the settlement of the question of the use of waters of Lake Michigan is purely a domestic question and leaves undisturbed the governmental rights of the United States with respect to it."

We are also advised that the Secretary of State, when he appeared [fol. 315] before the Foreign Relations Committee of the Senate, stated that the reason for allowing Canada 36,000 cubic second-feet of diversion of water at Niagara Falls, was because of the 10,000 second-feet of diversion at Chicago. This may be verified by reference to the proceedings of the Foreign Relations Committee of the United States Senate.

(6) The United States, by the Secretary of War, has consented to the reversal of the current and flow of the Chicago River, the south branch thereof and the west fork, and to the changing, if any, of the navigable capacity of the Chicago River and its branches in the respect and to the entire extent which has been or will be accomplished by the withdrawal of ten thousand cubic second feet of water from Lake Michigan. The main channel of the Sanitary District was opened and placed in operation on January 17, 1900. The waters of Lake Michigan were then drawn through it by way of the Chicago River and the branches mentioned. The channel was opened pursuant to consent of the Secretary of War by permit dated May 8, 1899. This permit was without limitation as to the amount of withdrawal or diversion, except that the limitation thereon would be the flowage capacity of the main channel of the District, which is in excess of ten thousand second feet. The permit of May 8, 1899, without the preambles thereto, is as follows:

"Now, therefore, the Chief of Engineers having consented thereto, this is to certify that the Secretary of War hereby gives permission to the said Sanitary District of Chicago to open the channel constructed and cause the water of Chicago River to flow into the same, subject to the following conditions:

[fol. 316] 1. That it be distinctly understood that it is the intention of the Secretary of War to submit the questions connected with the work of the Sanitary District of Chicago to Congress for consideration and final action and that this permit shall be subject to such action as may be taken by Congress.

2. That if at any time it becomes apparent that the current created by said drainage work in the south and main branches of Chicago River be unreasonably obstructive to navigation or injurious to property, the Secretary of War reserves the right to close said discharge through said channel or to modify it to such extent as may be demanded by navigation and property interests along said Chicago River and its south branch.

3. That the Sanitary District of Chicago must assume all responsibility for damages to property and navigation interests by reason of the introduction of a current in Chicago River."

The conditions, it will be observed, of said permit related only to the future action of Congress, current in the Chicago River and the payment of damage to property resulting from any current in said river. Work was commenced upon the construction of the main channel of the District in 1891. The District was organized in 1889. The Sanitary District Act specifies the sort of a channel which should be constructed across the continental divide to form an outlet for the sewage and drainage within the territorial limits of the District. Congress was notified by reports of the Chief of Engineers in each year, from the beginning of the construction of the channel, not only of the plans of the District for the construction of said channel and its operation and withdrawal of water for such purposes, but also [fol. 317] of the progress of the work. In 1895 the Secretary of War appointed a commission of engineers, of which General Poe was chairman, to investigate the subject of the effect of the withdrawal upon lake levels of ten thousand cubic seconds feet of water. This commission made a report in the year 1895 to the effect that the levels of the lakes would be lowered approximately six inches by said diversion. In 1896, and from that time on, various permits were issued by the Secretary of War to the Sanitary District for the construction of various works in the Chicago River, necessary to carry out the District's plans for the diversion. Finally, as before stated, after thorough investigation by the Chief of Engineers and his assistants and the recommendation of the Chief of Engineers, the permit of May 8, 1899, was issued. Thereafter the channel was opened. The condition of the permit of May 8, 1899, concerning the current in the Chicago River, was inserted because of the then tortuous narrow and shallow Chicago River channel.

It was considered that it would be necessary, in order for the District to withdraw the amount of water desired through the river channel, that the flowage capacity of same would have to be enlarged. It was therefore not long after the channel was opened that it was found that an excessive current was created. Therefore, the District made plans in the year 1900 for the widening of the Chicago River, the south branch and west fork thereof to its junction with the northern terminus of the main channel, so that the channel would have a width through the entire course of not less than two hundred feet and a depth of not less than twenty-six feet in the center. The channel at that time was only seventeen feet deep. It [fol. 318] was necessary also to reconstruct and replace bridges across the river. These plans were submitted to the Secretary of War and the purpose of The Sanitary District to deepen and widen the Chicago River was stated and a permit was issued by the Secretary of War to The Sanitary District to make all changes necessary and the specific changes above set forth. Prior to the time when the said work of deepening and widening the river was commenced and after the channel was opened and placed in operation, the Secretary of War had limited the permit of May 8, 1899, by specifying that the flow or withdrawal should not exceed two hundred and fifty thousand cubic feet per minute. This limitation was placed solely because of the current in the Chicago River and it was so expressed in the permit. It is upon this permit that the Government is now seeking the injunction. Thereafter, The Sanitary District deepened and widened the river, rebuilt and replaced bridges pursuant to the permit of the Secretary of War, and has expended, in order to remove the cause for the limitation of two hundred and fifty thousand cubic feet per minute, upwards of thirteen million dollars. The cause and the reason for the limitation of the flow to the amount named has been removed and, therefore, the limitation becomes ineffective.

April 21, 1891, the Board of Trustees of The Sanitary District passed a resolution in regard to the use of the Chicago River and a certified copy thereof was sent to the Secretary of War. The resolution is as follows:

"Resolved that this Board hereby ordains that The Sanitary District of Chicago, do, forthwith, enter upon, use, widen, deepen and improve the Chicago River from its mouth at Lake Michigan to the south branch thereof and also the south branch thereof together with the south and west forks thereof so as to make the same a proper and sufficient supply channel for the main channel heretofore surveyed from the Chicago River to Joliet and further, that the acting Chief Engineer be and he is hereby directed immediately to investigate and report upon the capacity of said river and its said south branch and forks for that purpose, and also as to any changes that should be made therein and that a copy of this resolution, certified by the clerk be, forthwith, transmitted to the mayor and common council of the City of Chicago and the Secretary of War of the United States."

Congress, the Secretary of War, Chief of Engineers and his various assistants have had knowledge and notice of the plans and purposes of The Sanitary District in the construction of its works for diversion purposes and in the use of the waters of Lake Michigan for the operation of such works. There has been an acquiescence and at least a tacit agreement that the amount which The District needs, up to ten thousand second feet, would not be limited and that the diversion for sanitary purposes was recognized as being a paramount and primary use. The treaty between the United States and Great Britain with reference to Canadian boundary waters recognizes that the use for sanitary purposes is first and paramount to the use for all other purposes.

The Illinois and Michigan canal was constructed pursuant to Act of Congress of March 2, 1827, "to unite the waters of the Illinois River with those of Lake Michigan." Section 16 of the Act of January 9, 1836, the General Assembly of Illinois provided that the canal should "be supplied with water from Lake Michigan and such other sources as the Canal Commissioners may think proper." The Supreme Court of the United States, in *Missouri v. Illinois*, 200 U. S. 495, 526, concerning the effect of the Congressional and State Acts, said:

"Some stress is laid on the proposition that Chicago is not on the natural watershed of the Mississippi, because of a rise of a few feet between the Desplaines and the Chicago rivers. We perceive no reason for distinction on this ground. The natural features relied upon are of the smallest. And if, under any circumstances, they could affect the case, it is enough to say that Illinois brought Chicago into the Mississippi watershed in pursuance not only of its own statutes but also of the acts of Congress of March 30, 1822, * * * and March 2, 1827, * * * the validity of which is not disputed."

From the time the Illinois and Michigan canal was placed in operation, water has been withdrawn through it from Lake Michigan, not only for navigation purposes, but also for sanitary purposes. The withdrawal for sanitary purposes increased as the sanitation needs of Chicago required it. In 1873 the channel of the Illinois and Michigan canal was deepened at the expense to Chicago of three million dollars in order to increase the withdrawal and thereby cleanse the Chicago River. In 1884 pumps were installed at Bridgeport to accomplish a greater withdrawal. The Sanitary District Act and the works constructed thereunder accomplished the replacement of the old Illinois and Michigan canal by the main channel of The Sanitary [fol. 321] District. This was so held in the case of *Mortell v. Clark*, 272 Ill. 201, 213.

(7) The diversion of at least 10,000 cubic second-feet of water from Lake Michigan is essential for the sanitary needs and requirements of the population within the limits of The Sanitary District, which includes that of the City of Chicago and its suburbs, comprising a population of approximately 3,000,000 people. The primary

purpose of The Sanitary District is to construct and operate works to provide a pure drinking water supply for this population. The plans for the works of The Sanitary District were formulated and recommended by a commission of engineers, pursuant to an ordinance of the City of Chicago, known as "Drainage and Water Supply Commission." This commission studied the matter for two or three years and finally recommended the diversion of the drainage and sewage of Chicago and its environs to the Desplaines River, together with a sufficient amount of water from Lake Michigan (20,000 cubic feet per minute for each 100,000 population) to oxidize the sewage and waste. This Commission's report was made in 1887 and The Sanitary District Act was passed pursuant to the recommendations of that Commission at the next session of the Legislature, and the District has expended upwards of \$100,000,000 in the construction of these works. They have accomplished practical results. There was not at the time the Commission made its report, and there has not been since that time, any other practical method that could have been adopted to accomplish the purpose of these works—namely, the protection of the water supply. The record in this case [fol. 322] shows that the art of artificially purifying sewage has been for years, and is now, in a state of uncertainty, and there is no plan for artificially purifying sewage that engineers agree is feasible and practical, and will with any certainty serve for a considerable period of time in the future—and this is particularly true when dealing with great metropolitan populations.

The basis, therefore, of The Sanitary District's diversion works is the reversal at all times of the Chicago River, into which a large amount of sewage is emptied from sewers serving the people of Chicago and its suburbs. The maximum run-off of the Chicago River drainage area is 10,000 cubic second-feet. Obviously, if the capacity of the main channel of the District were less than 10,000 second-feet, the Chicago River would flow into Lake Michigan at certain flood times. The withdrawal of water from Lake Michigan must, therefore, be the same amount, because it would be impossible, if the flow were limited to 4,167 feet, or any amount materially below the 10,000 second-feet, to change the flow from the limited amount to the maximum run-off of the drainage area in time to keep the water from going into Lake Michigan. This is demonstrated by testimony of witnesses in this case and it is recognized as a fact by the report of Col. Warren, Division Engineer of the Lakes Division, above mentioned. The limitation of the flow to 4,167 second-feet, or any amount materially less than 10,000 second-feet, would, therefore, require the absolute and complete purification of all sewage within the limits of the District, so that if any effluent found its way into Lake Michigan, it would not affect the water supply.

[fol. 323] There was presented in this case estimates of the cost of constructing artificial purification works to completely purify the sewage and drainage. These estimates were made in the year 1913. The total cost of constructing these works, which would require a great number of years to complete, was from \$75,000 000 to \$100,-

000,000. The figures were made with reference to the cost of materials, labor, etc., as of the year 1913. Since that time the cost of labor and materials for similar works has increased approximately 100 per cent, so that to install the works which would be made necessary by reason of the limitation of the flow to 4,167 second-feet, would be from \$150,000,000 to \$200,000,000. The cost of operating and maintaining these works annually was also estimated, and the estimates were upwards of \$5,000,000 per annum. The annual operating and maintenance cost would now, according to present prices of labor and materials, much exceed that amount.

It is also shown in the record in this case that it would be impossible for the District or this community to raise the money necessary to construct these works within any reasonable time, unless constitutional amendment should permit greater bonding power.

In addition to the amount which the District would be compelled to expend by virtue of the limitation of flow to 4,167 second-feet, it would lose the greater portion of the investment that it has already made in the present diversion works.

Furthermore, it is probable that any works which the District might install for the purification of sewage and drainage would, within a very short time, have to be discarded and thrown aside for [fol. 324] some other works upon a different plan. Indicative of the changes in the art of artificially purifying sewage that have taken place we refer to the fact that it was only five years ago that most sanitary engineers believed that the best method to be used was the Imhoff Tank system. In these tanks a certain amount of sewage was allowed to settle and the effluent drawn off to run through what are called "sprinkling filters," by which the effluent from the Imhoff tank was, by means of a nozzle, sprayed over crushed rock of several feet in thickness. Lately, sanitary engineers have reached the conclusion that such method is not proper but that what is known as the "activated sludge" system should be used. This system contemplates the passing of the sewage and drainage at low velocities through tanks, which tanks are provided at the bottom with perforations so that a vast amount of air may be pumped through the sewage and thereby the sewage be purified.

If the District were limited now to the withdrawal of 4,167 second-feet, at many times during the year the Chicago River would flow into Lake Michigan, carrying with it a vast amount of sewage. At and prior to the time the Drainage Canal was opened and placed in operation, the death rate per year from typhoid fever was 75 per 100,000 population. Occasionally there would be epidemics, when the rate would be 190 per 100,000. Since the opening of the Drainage Canal there has been a steady reduction in the death rate per year from typhoid fever, with no epidemics, so that now the death rate from typhoid fever is less than 1 per annum per 100,000 of population. According to Hazen's theorem, where there is an increase of 1 per annum in death rate from typhoid fever, there is an increase of 3 from other kindred disease; and the same theorem applies conversely to a decrease. The limitation to 4,167 second-feet

would produce intolerable conditions in the Illinois River, because of the fact that the principal amount of the sewage of Chicago and its suburbs would be delivered to the Desplaines and Illinois Rivers without the necessary pure water for oxidization and purification purposes. All fish life would be destroyed throughout the entire course of said river and the fish industry along the Illinois River is one of the principal industries of the state. The conditions above mentioned that would result from the limitation of flow to 4,167 second-feet would continue until works were installed to practically purify a very large portion of the sewage and drainage arising within the limits of The Sanitary District, and it would continue to a certain extent until the works were installed to purify all sewage and drainage.

8. Since the drainage Canal was opened, January 17, 1900, all boats that were then navigating the Great Lakes and its connecting waters are not interfered with in any respect, by a less depth due to lowering of lake levels. All boats which the United States claims are affected—those owned by the Pittsburgh Steamship Co., a subsidiary of the United States Steel Corporation—were constructed since that time. All the critical points of navigation of the Great Lakes have been, since the opening of the Drainage Canal, deepened or improved, and the record in this case shows that the reference plane for the improvement of 1903, which included practically all the connecting channels, was made approximately 6 inches lower because of the diversion at Chicago—so that, the navigation interests have not been injured. They have the same depth of water that they would have had if the diversion had not existed.

[fol. 326] 9. The Sanitary District here and now offers and agrees to pay to the United States the amount of money necessary to construct, operate and maintain the compensating works which will off-set or compensate for any damage due to the diversion at Chicago. These works the Federal engineers have said may be installed and will accomplish the purpose named. If they were installed and placed in operation, the only ground of the Government for seeking the injunction here would be removed. The expense would be practically nothing as compared with the financial burden that would be placed upon the District if it is enjoined from withdrawing more than 4,167 second-feet of water, or any amount materially less than 10,000 second-feet. The only thing that the Government would have to do in order to accomplish the installation of the works would be to provide for their construction, operation and maintenance. The suggestion for modification of the opinion and direction of the court with reference to the decree in these cases herein made points out the plain practical solution of this problem.

The facts above mentioned are all found in the record, except those that have arisen since the closing of the taking of testimony (1914) or those discovered since—negotiations leading up to Canadian Boundry water treaty.

Respectfully submitted, ———, Attorney for the Sanitary District of Chicago. ———, of Counsel.

An ordinance of the Board of Trustees of the Sanitary District of Chicago offering and agreeing to defray the expense of the construction of works in one or more of the outlets of the Great Lakes to compensate for any diminishing levels of the Great Lakes and connecting waters due to the diversion of 10,000 cubic feet of water per second from Lake Michigan by the Sanitary District of Chicago and authorizing the attorneys of the Sanitary District in the suits pertaining to said diversions now pending in the District Court of the United States for the Northern District of Illinois, Eastern Division, to make and present such offer and agreement in open court.

Whereas, there are now pending in the District Court of the United States, for the Northern District of Illinois, Eastern Division, two suits in equity instituted by the United States against The Sanitary District concerning the withdrawal of water from Lake Michigan by The Sanitary District of Chicago. The first suit was instituted in the year 1908 and pertains particularly to the construction and operation and withdrawal of water for the operation of the Calumet Sag Channel, an adjunct of the main channel of The Sanitary District of Chicago. The second suit was instituted in the year 1913 and seeks to enjoin The Sanitary District from withdrawing from Lake Michigan, through its various channels, including the Calumet Sag Channel then and now under construction, [fol. 328] more than 4,167 cubic feet of water per second. The said suits have been tried together and submitted together upon briefs; and,

Whereas, the Honorable Kenesaw M. Landis, one of the Judges of said District Court of the United States, for the Northern District of Illinois, Eastern Division, before whom said cases have been pending, did recently render an opinion or direction for the entry of a decree in said cases, in substance, to enjoin The Sanitary District of Chicago, defendant in said cases, from withdrawing from Lake Michigan more than 4,167 cubic feet of water per second; and

Whereas, various reports have been submitted pursuant to acts of The Congress of the United States by the Engineer Corps of the U. S. A., finding that the claim of injury to navigation arising from the lowering of lake levels because of the diversion from Lake Michigan of water at Chicago to the extent of 10,000 cubic feet of water per second, may be compensated for by the construction of fixed weirs or works of similar character, or by the construction and operation of movable dams in the St. Clair, Niagara and St. Lawrence Rivers, or one or all of them, and that the expense of constructing said fixed weirs would, at the time the report was made, not exceed \$475,000; and it was recommended that if The Sanitary District of Chicago should defray the expense of constructing such works, then they should be maintained by and at the expense of the

United States; and, if such works were constructed and placed in operation, thereby the ground of the United States for securing the injunction herein would be removed; and,

[fol. 329] Whereas, it is the opinion of the Board of Trustees that if The Sanitary District is enjoined from taking more than 4,167 cubic feet of water per second from Lake Michigan for sanitary purposes, it will be necessary to expend, in the construction of works to artificially purify sewage, supplement and aid the works diverting 4,167 cubic second feet of water upwards of \$150,000,000, and the operation and maintenance of the same will exceed upwards of \$5,000,000 per annum; and it is, further, the belief of the Board of Trustees of The Sanitary District of Chicago that it is doubtful whether such works, with said limited withdrawal of 4,167 cubic second feet of water will provide for the people of The Sanitary District of Chicago, which includes the population of Chicago and its environs, a safe drinking water supply, for the reason that it would be impossible, with said limited withdrawal, to keep the Chicago River at all times reversed so that it would not flow into Lake Michigan, carrying with it a large amount of sewage and drainage, and it is doubtful whether such purification works would accomplish practical results.

Now, therefore, be it ordained by the Board of Trustees of the Sanitary District of Chicago:

Section 1. The Sanitary District of Chicago does hereby offer and agree to defray the expense, and pay to the United States Government the cost, of constructing and maintaining works to be installed at the outlet or outlets of any of the Great Lakes to compensate for any diminishing levels of the Great Lakes and connecting [fol. 330] waters, due to a diversion or withdrawal from Lake Michigan of 10,000 cubic feet of water per second by The Sanitary District of Chicago through its various channels and diversion works in the event The Sanitary District is not enjoined from diverting from Lake Michigan less than 10,000 cubic seconds feet of water.

Section 2. The said offer and agreement contained in Section 1 hereof is intended to embrace and cover, not only the expense of constructing and maintaining fixed weirs or dams described in the report entitled "Final Report of Waterways from Lockport to the Mouth of the Illinois River," House of Representative's Document No. 762, 63rd Congress, 2d Session, but also any other works of similar character that may be planned or provided for by the Congress of the United States or by competent Governmental authority, or works known as "regulating works," consisting of movable dams or dams that may be moved from time to time, that may be planned or provided for by The Congress or other competent authority—such works having for their purpose compensation for any diminishing levels of the Great Lakes or connecting waters due to a diversion at Chicago of 10,000 cubic second feet of water; and the said The Sanitary District of Chicago offers and agrees to pay to the United States the expense of constructing and maintaining such works when-

ever the United States shall provide for such construction and make request for the payment of the amount of money necessary to construct and maintain the same.

Section 3. The attorneys for The Sanitary District of Chicago in [fol. 331] said two suits above described, wherein the United States is complainant and The Sanitary District of Chicago is defendant, on behalf of The Sanitary District of Chicago, are hereby authorized, empowered and directed to present and make said offer in open court in said causes, or in any other manner that the said attorneys may deem proper.

Section 4. The preambles to this Ordinance are hereby made a part of same and this Ordinance shall take effect and be in force from and after its passage.

Approved:

William J. Healy, President of the Sanitary District of Chicago.

[Title omitted]

NOTICE

To Honorable Charles F. Clyne, United States District Attorney for the Northern District of Illinois, attorney for the complainant:

Please take notice, That on Monday morning, the 12th day of [fol. 332] July, A. D. 1920, at the opening of court, or as soon thereafter as counsel can be heard, we shall appear before Honorable Kenesaw M. Landis, one of the judges of said court, in the Federal building, Chicago, Ill. in the room usually occupied by him as a court room and present the foregoing motion for modification of oral opinion of said court and oral direction of the court with reference to the entry of the decree herein, at which time and place you may be present if you see fit.

— — —, Attorney for Defendant.

[fol. 333] And the following is an amendment to said motion, filed herein:

[fol. 334] [Title omitted]

[fol. 335] IN THE DISTRICT COURT OF THE UNITED STATES FOR
THE NORTHERN DISTRICT OF ILLINOIS, EASTERN DI-
VISION

[Title omitted]

AMENDMENT TO MOTION FOR RECONSIDERATION OF ORAL OPINION
AND ORAL DIRECTION OF THE COURT CONCERNING THE FORM OF
DECREE IN SAID TWO CAUSES, TOGETHER WITH GROUNDS OF SAID
MOTION

Now comes the Sanitary District of Chicago, by William F. Mulvihill, Morton S. Cressy and Edmund D. Adcock, its attorneys and amends its "Motion for Reconsideration of Oral Opinion and Oral Direction of the Court Concerning the Form of Decree in said two Causes, together with Grounds of said Motion," by inserting, at page 27 of said printed motion, and at the end of paragraph No. 7 thereof, a new paragraph known and called paragraph No. 7 $\frac{1}{2}$ as follows:

"7 $\frac{1}{2}$. On, to wit, August 7, 1919, the Board of Trustees of the Sanitary District of Chicago duly adopted an ordinance, which ordinance was approved by the President of said Board, entitled: [fol. 336] 'An ordinance of the Board of Trustees of the Sanitary District of Chicago laying out and adopting a program for the construction and operation of works for the purification of or the removal of solids and organic and inorganic matter from sewage, trade waste, offall and other organic and inorganic matter so that within the period of the next twenty-five years not more than fifty per cent of the amount of said sewage and waste that is now passing into the Desplaines River from the main channel of the Sanitary District will at the end of such period find its way into said river. Such works are to supplement those constructed or in process of construction for the diversion of sewage and drainage arising within the limits of the Sanitary District of Chicago.'"

The said ordinance, exclusive of the preambles, is as follows:

"Be it ordained by the Board of Trustees of the Sanitary District of Chicago:

Section 1. To supplement the works of the Sanitary District of Chicago now constructed or in the process of construction for the diversion of sewage or drainage, and to aid said works in better accomplishing the purpose for which they were constructed, the Sanitary District does hereby lay out and adopt a program for the construction and operation of works for the purification of sewage or the removal of organic or inorganic matter from human sewage

and the removal of trade wastes and other wastes and for the carrying on of such work at such a rate as continuously after the lapse of four years to diminish the amount of sewage including all wastes passing into the Desplaines River by way of the Main Channel of the Sanitary District of Chicago, so that within the period of twenty-five years such purification works shall be constructed and in operation, that the amount of such raw sewage and wastes so passing into [fol. 337] said Desplaines River shall be at least fifty per cent less than that passing now.

Sec. 2. The Chief Engineer and the Attorney of the Sanitary District are hereby directed to take such steps as may be necessary to carry forward the foregoing program, and the Chief Engineer is directed to report to such officers of the United States and the State of Illinois as may be interested, the progress made from time to time in carrying out said program.

Sec. 3. The foregoing preamble to this ordinance is hereby adopted and made a part of same.

Sec. 4. This ordinance shall be in full force and effect from and after its passage and adoption."

In 1921 the General Assembly of Illinois amended the Sanitary District Act so as to specifically authorize the Board of Trustees to construct the works and carry out the program for sewage purification, as set forth in the foregoing ordinance. The said ordinance was passed by the Board of Trustees of the Sanitary District of Chicago after negotiations with the Division Engineer at Chicago, representing the Chief of Engineers of the United States Army, and a draft of said ordinance was submitted to said Division Engineer at Chicago before it was passed, and said draft of ordinance was approved. It was stated by the said Division Engineer that the passage of said ordinance, and the carrying out of the program for sewage treatment, so mentioned in said ordinance, would be satisfactory to the United States, as the final solution of the problems involved in the controversy between the United States and the Sanitary District. The Sanitary District of Chicago has, since the adoption of said ordinance by its Board, carried out the program in said ordinance mentioned, as laid out, and is now constructing sewage treatment [fol. 338] works. Said sewage treatment works now constructed, or under construction have, or will cost many millions of dollars and the Sanitary District has planned the construction of further works to carry out in good faith the program for sewage treatment, so outlined in said ordinance.

William F. Mulvihill, Attorney for the Sanitary District of Chicago, Defendant. Morton S. Cressy, Edmund D. Adcock, of Counsel.

[fol. 339] Thereupon, on July 12, 1920, the said motion entitled "Motion for Reconsideration of Oral Opinion and Oral Direction of

the Court Concerning the Form of Decree in said two Causes, together with Grounds of Said Motion" was presented to the Honorable Kene-saw Mountain Landis, Judge of the District Court of the United States, for the Northern District of Illinois, Eastern Division, and partly heard and argued; and thereafter Judge Landis resigned his position as Judge of said Court and ceased to become Judge thereof on March 1, 1922. No further proceedings were had before Judge Landis in said cause between the date of the presentation of said motion and its being partly heard and argued before him and said March 1, 1922, when Judge Landis left the bench; and, thereafter, the cause was assigned to Honorable George A. Carpenter, Judge of [fol. 340] said Court. Thereafter, on June 18, 1923, the Court entered the following order:

ORDER REFUSING OFFER TO CONSTRUCT CERTAIN WORKS

"The motion presented herein on the 12th day of July, 1920, by the defendant, asking that the defendant be not enjoined or restrained from withdrawing from Lake Michigan less than ten thousand (10,000) cubic seconds feet of water, and in connection with said motion an offer was made to pay cost of constructing and maintaining such works and might be provided by complainant to off-set for the lowering of the surface elevations of Lakes Michigan, Huron, St. Claire, Erie and Ontario, due to a diversion of said amount by the defendant at Chicago, is hereby denied, and the said offer is refused."

To the entry of which order the defendant duly excepted.

Thereupon, on June 18, 1923, the Court entered the following order and decree:

DECREE FOR INJUNCTION

"That the defendant, the Sanitary District of Chicago, its Board of Trustees, officers, agents, attorneys, representatives, employees and servants, and all other persons acting or claiming or assuming to act under its authority, be, and they hereby are, and each of them hereby is, enjoined from diverting or abstracting any waters from Lake Michigan over and above or in excess of 250,000 cubic feet per minute.

The operation of this injunction is hereby stayed for a period of [fol. 341] six months to enable the defendant to present the record herein to the Supreme Court of the United States."

To the entry of which order and decree the defendant duly excepted.

ORDER SETTLING CERTIFICATE OF EVIDENCE

The foregoing is all the evidence and proceedings had in the above entitled consolidated cause, and inasmuch as the matters above set forth do not fully appear of record in this suit, the defendant tenders this certificate of evidence and prays that the same may be certified under the hand and seal of the Judge of this Court and thereupon made a part of the record in such cause, and it is certified accordingly, this 29th day of June, A. D. 1923.

George A. Carpenter, Judge. (Seal.)

[fol. 342] [File endorsement omitted.]

[fol. 343] IN THE DISTRICT COURT OF THE UNITED STATES FOR THE
NORTHERN DISTRICT OF ILLINOIS, EASTERN DIVISION

[Title omitted]

PRÆCIPUE FOR TRANSCRIPT OF RECORD—Filed June 29, 1923

To the Clerk of said District Court:

Please prepare transcript of record in the above entitled cause and insert therein the following:

1. The bill of complaint in case number 29019.
2. The answer of the defendant thereto.
3. Exceptions of the complainant to answer of the defendant.
4. Bill of complainant in case number 114.
5. Answer of the defendant to said bill.
6. Certificate of evidence.
8. Stipulation of June 29, 1923.
9. Order of June 18, 1923, consolidating two causes number 114 and 29019.
10. Order of June 18, 1923, denying defendant's motion of July 12, 1920.
11. Final decree entered June 18, 1923.
12. Petition and order for appeal to the Supreme Court of the United States.
13. Assignment of Errors.
14. Order to make part of the record all of the evidence taken in [fols. 344 & 345] the case in the exact words of the witnesses.

15. Appeal bond.
16. Copy of this præcipe.
17. Order entered substituting printed record for typewritten record as filed by the Commissioner.
18. Order extending time to file transcript of record.
19. Copy of Motion to strike part of answer Feb. 18, 1914.
20. Opinion of Judge Carpenter June 18, 1923.

Clyde L. Day, Edmund D. Adcock, Attorneys for Defendant.

[File endorsements omitted.]

[fols. 346 & 347] NORTHERN DISTRICT OF ILLINOIS,
Eastern Division, ss:

CLERK'S CERTIFICATE

I, John H. R. Jamar, Clerk of the District Court of the United States for the Northern District of Illinois, do hereby certify the above and foregoing to be a true and complete transcript of the proceedings had of record made in accordance with Præcipe filed in this Court in the cause entitled The United States of America vs. The Sanitary District of Chicago, No. 114, in Equity, as the same appear from the original records and files thereof now remaining in my custody and control.

In testimony whereof, I have hereunto set my hand and affixed the seal of said Court at my office, in the City of Chicago, in said District, this 15th day of August, A. D. 1923.

John H. R. Jamar, Clerk. (Seal of Dist. Court U. S., Northern Dist. Illinois.)

[fol. 348] IN THE DISTRICT COURT OF THE UNITED STATES

[Title omitted]

CERTIFICATE OF EVIDENCE

Further proceedings in the above-entitled cause before Samuel M. Morgan, Commissioner, on Wednesday April 25, 1923, at 10.30 o'clock a. m., at the Rookery Building, Chicago, Illinois, pursuant to stipulation.

Appearances: Mr. Edwin A. Olson, U. S. Attorney; Mr. Joseph B. Fleming, Special Assistant to the Attorney General, on behalf of the Complainant, Mr. Clyde L. Day, Mr. George F. Barrett, Mr.

Louis J. Behan, and Mr. Edmund D. Adcock, on behalf of the Defendant.

[fol. 349] Mr. Adcock: I will offer in evidence a certified copy of an ordinance passed by the Board of Trustees of The Sanitary District on August 7, 1919.

Mr. Fleming: The record will show my objection.

Mr. Adcock: I think there is a stipulation in the record to the effect that objections as to materiality, relevancy and competency may be preserved, without making the formal objection at the time. It may be presented at the hearing or any other time. Proper objections to the form of question and answer are to be taken at the time the testimony or evidence is presented, in order to avoid the necessity of taking it over again.

Mr. Fleming: If that is preserved, that is all I want.

Mr. Adcock: I offer that copy as Pearse Exhibit 1 of this date.

(Certified copy of ordinance passed by the Board of Trustees of The Sanitary District on August 7, 1919, offered in evidence, was marked Pearse Exhibit 1, April 25, 1923, and is hereto attached.)

Mr. Adcock: I offer a certified copy of an ordinance of the Board of Trustees of the Sanitary District of Chicago, passed by the Board [fol. 350] at a meeting held on July 8, 1920, as Pearse Exhibit 2 of this date.

(Certified copy of ordinance of Sanitary District offered in evidence, was marked Pearse Exhibit 2, April 25, 1923, and is attached hereto.)

Mr. Adcock: I offer in evidence as Pearse Exhibit 3 of this date a copy of a letter dated May 24, 1921, from the Division Engineer at Chicago, Colonel William V. Judson, Corps of Engineers, to the Chief of Engineers of the United States Army at Washington D. C. This is subject to verification as to correctness of the copy that is offered.

(Letter of Colonel William V. Judson dated May 24, 1921, offered in evidence was marked Pearse Exhibit 3, April 25, 1923, and is hereto attached.)

[fol. 351] LANGDON PEARSE, a witness called on behalf of the defendant, was first duly sworn by the Commissioner, and testified as follows:

Direct examination.

By Mr. Adcock:

Q. Your name is Langdon Pearse?

A. Yes, sir.

Q. You reside where?

A. In Winnetka, Illinois.

Q. What connection if any have you with the defendant, the Sanitary District of Chicago?

A. I have been employed with The Sanitary District of Chicago in various capacities since March 1st, 1909; at present in the position of Sanitary Engineer, in charge of the sanitary engineering work of the District.

Q. Will you state your education, and generally your experience; what you have done in the engineering world?

A. I am a graduate of Harvard College with the degree of A. B. in 1899; and from the Massachusetts Institute of Technology, with a degree of Bachelor of Science in Civil Engineering; also Master of Science in Civil Engineering, of date 1902.

In the period between 1901 and 1909, at which time I became [fol. 352] connected with the Sanitary District, I was successively Levelman for the Massachusetts Harbor and Land Commission, on the Brockton Ship Canal; Assistant Engineer to the Charles River Dam Commission, under John R. Freeman; Assistant Engineer for the Commission on Additional Water Supply in New York City, known as the Herring-Burr-Freeman Commission; also as Personal Assistant to George C. Whipple in work for the Augusta Water District, Me., Cleveland and Jersey City; and also in connection with the suit of Missouri vs. Illinois.

From there, I was Assistant Engineer for the Improved Water and Sewage Works at Columbus, Ohio, involving the construction of a water filtration and softening plant; also sewage treatment; and also Assistant Engineer on the Greater Water Supply for the People's Water Company of Oakland, California, a water filtration project.

From 1909 to date, I have been successively assistant engineer, division engineer, and since 1907, sanitary engineer with the Sanitary District of Chicago, in charge of all sanitary work, involving the laboratory work covering chemistry and bacteriology, in connection with our testing stations, studies of the Canal and River, [fol. 353] as well as industrial wastes; the construction and operation of four Testing stations, respectively on domestic sewage at 39th Street and the Lake, packinghouse waste, tannery sewage and Corn Products sewage; the design and construction of intercepting sewers in size from six inches to twenty-two feet in diameter, including the North Shore Intercepting Sewer, the Stockyards Intercepting Sewer, the Calumet Intercepting Sewer, and the 52nd Avenue Sewer Outlet; the design of sewage pumping stations, known as the Evanston, Desplaines, Calumet, 95th Street stations, and also the remodeling of Lawrence Avenue and 39th Street; the design of sewage treatment works and other construction at Morton Grove, the so-called Calumet works at 125th Street and Cottage Grove Avenue, the Desplaines River Treatment Works, near the Subway Hospital in Broad view; Glenview Sewage Treatment Works, and the designs for the North Side Sewage Treatment Works.

I have further been in charge of the general operation of the Sewage Treatment Works, of which we now have three in operation, one at Morton Grove, one at Calumet, and one known as the Desplaines River.

In addition to these technical duties, I have also been in charge [fol. 354] of preparing special reports and data for the use of the Chief Engineer and others in different suits.

In addition to my duties with The Sanitary District, I have further served as a Consultant for the U. S. Public Health Service on stream pollution for the last three years; and in that connection served for the Sanitary District on a joint survey with the U. S. Public Health Service of the Illinois River, extending over a period of one year.

In my private capacity as a Consulting Engineer, I have executed the following works, in special partnership with George W. Fuller; designed and built the Evanston Water Filtration plant. As a member of the firm of Pearse, Greeley & Hansen, we designed and built the Decatur, Illinois Dam & Sewage Treatment Works; the Whiting, Indiana Water Filtration plant, and the Winnetka, Illinois Water Filtration plant.

And further, as engineer, have made reports for, designed and built works for the Sanitary District of Decatur, the North Shore Sanitary District, the Downers Grove Sanitary District, the Sanitary District of Champaign and Urbana; and in addition have made miscellaneous reports on industrial wastes for the Holland-St. Louis [fol. 355] Sugar Company, the Standard Oil Company of Indiana and others.

I am also a member of the American Society of Civil Engineers, and the American Institute of Consulting Engineers.

Q. What studies have you made in regard to the sewage disposal problem of The Sanitary District?

A. I was first employed on the work in 1909, with the intent of making a complete and thorough investigation of the sewage treatment problem of The Sanitary District. I have been at that ever since.

I first went into the engineering details in the so-called 1911 report of Mr. Wisner, who was then Chief Engineer; and later in 1912 and 1914, I went into the matter again in connection with this particular law suit for Mr. Wisner. And further in 1919 and 1920, in connection with the report of the so-called Expert Commission composed of Eddy, Fuller and Hattön.

It was early evident that to unravel the sewage treatment problem, a close study was required, not only of the sewage from the human sources, but also of the wastes of industrial origin.

The study of the domestic sewage was begun by a testing station [fol. 356] at 39th Street and the Lake, operating on sewage coming from an area of over twenty-two square miles, and from a population of 270,000 and up. This was very free from industrial wastes. In this Station were tried all the practical methods of sewage treatment then known, including septic tanks, Imhoff tanks, biolytic tanks, sprinkling filters, etc.

Q. Just explain those different terms, what the methods are?

A. The difference between the different tanks mentioned is essentially one of construction as well as operation. By septic tanks, I mean the single story tank in which the solids deposited from the

sewage are allowed to accumulate, with cleaning at infrequent intervals.

By the Imhoff tank, I mean a double deck type of tank in which the upper chamber serves as a settling chamber, the solids passing through a trap into the lower chamber where they digest at leisure, the gases passing off through a separate vent, in order not to contaminate the sewage flowing through, which is settling.

The sludge from this tank may be drawn at intervals of two weeks, [fol. 357] in the warm weather; the storage capacity provided being from four to six months, according to the design.

The biolytic tank is a special device, in which all the sewage entering the tank comes in at the bottom and passes through the sludge deposit. This tank has been used only experimentally, and while it gave a remarkable reduction of sludge, it produced offensive odors and was therefore discontinued.

The sprinkling filters mentioned are beds of crushed stone, in the experimental work ranging from five to ten feet in depth, but usually in active work around six feet and a half, the stone being composed of one and a half to two inches in size. These beds are placed upon prepared underdrains to permit free drainage of the liquid trickling down through. The liquid is sprinkled upon the surface by nozzles spaced up $13\frac{1}{2}$ feet on centers, operating intermittantly and dosing the beds at a rate of from two to five million gallons per acre per twenty-four hours.

Q. How was the station operated there at 39th Street?

A. The 39th Street Testing Station was operated from October 1909 to January 1915. The results that were obtained there indicated that with the more dilute sewage found in Chicago, liberal [fol. 358] provision for treatment, loadings, was required.

The value of the Imhoff tanks and sprinkling filters was clearly demonstrated.

Following the study of the domestic sewage, we entered upon an extended study of the Packingtown situation in January 1911. The preliminary investigation showed the lack of knowledge for handling such waste. Consequently a Testing Station was established in 1912, and operated until September 1918. These studies showed that the activated sludge process was the most promising of success on Packinghouse waste.

I might explain that the activated sludge process is a process in which the solids settling from the sewage are held back and conditioned by the blowing of air, so that in a period of about two weeks it has acquired the property of changing from the organic matter coming in the sewage to a more mineral form. It is essentially a biological process, involving the same principles as in the sprinkling filter, except that the films which are active and doing the work are held in suspension by air blown in at the bottom of the tanks, instead of the films being around the periphery of the stones in a bed above ground. The sludge is retained by settling tanks, returned to the [fol. 359] incoming sewage and then held in contact and in thorough mixture by the air blown in at the bottom of the tanks.

From day to day a certain amount of sludge can be removed from

the system, about one thousand pounds per million gallons of domestic sewage, and in the case of Packingtown about between three and four thousand pounds of dry solids per million gallons.

This sludge is higher in nitrogen than the usual sludge from Imhoff tanks or other processes.

Q. The activated sludge method is substantially a reversal of the sprinkling filter, isn't it? In the one you pump the air in, while in the other you disseminate it, so the air can get to it?

A. Yes, in that sense.

In connection with our packinghouse investigation, a thorough inspection was made of every packinghouse in the Sanitary District, the flow from each being gaged and analyzed before entering the sewer.

In 1911, all the packinghouses were examined. In 1917, the work was repeated, the flow of thirty-one houses being measured and analyzed in a period of about three months. [fol. 360] The study of the tannery situation was begun in 1912. A recent investigation showed twenty houses all located on the North Branch of the Chicago River. After a number of inspections, a tannery testing station was established in December 1919, and operated up to December 31, 1922. In this the various processes applicable to handling tannery wastes were tried, including sprinkling filters and activated sludge. A survey of the industry was also made, house by house.

The Corn Products Refining Company plant at Argo was early recognized as an outstanding source of organic pollution. After some preliminary work, a testing station was established in 1921, by which the experiments have been conducted to date, using activated sludge and also a sprinkling filter. The flow of the plant has been measured, analyzed and correlated to the grind. This plant manufactures primarily starch and glucose, and is the largest of its kind in the world, grinding upwards of 75,000 bushels of corn every twenty-four hours.

Q. Are there any other sources of pollution than the ones you have mentioned; that is outside of the human sewage?

A. Yes, sir, there are other sources of pollution, which we have [fol. 361] investigated in a cursory way, which add to the load, but are not so important as those listed. Among these may be mentioned the Pope Beet Sugar factory, miscellaneous butterine factories, paint and glue works, gas works, paper mills and wire mills.

Q. Have you reached any conclusion as to the method to pursue in artificially treating these wastes and sewage?

A. Yes, sir.

Q. What is that conclusion?

A. The study I have made in the last fourteen years has led me to divide the Sanitary District into five main geographical projects, namely:

The Calumet, South of 87th Street.

The Southwest, South of the Canal and the river and North of 87th Street.

The West, north of the canal and river, and south of Fullerton Avenue in general, and the

North Side project, North of Fullerton Avenue.

In addition, there is the Desplaines River project.

Besides these five main projects, there are the Packingtown, Corn Products and Tannery industrial projects. The first two require [fol. 362] separate treatment plants distinct from the human sewage plants, whereas the tannery situation is to be combined with the North and West Side projects.

Besides the major projects outlined, there are and will be for many years small treatment units, plants for isolated villages such as Morton Grove, Glenview, Shermerville and the like, where the population is small and the distances are too great to warrant the construction of an intercepting sewer at present.

Q. Have you made any estimate of the population of the Sanitary District as it probably will be at different times in the future?

A. Yes, sir, I have made a careful study of the population in the Sanitary District from the United States census figures from the component parts of the census of 1890, 1900, 1910 and 1920. From the figures an estimate has been made of the future population of the District up to 1960. The growth of the various sewage treatment project areas has also been worked out in detail.

Q. Just state how you make those estimates of the future population.

A. We have plotted the populations as they have existed, with the [fol. 363] correction for the date, on paper, and then projected a curve on that.

We have further tested the ten year increment by the actual differences, taking into account the growth of the territory of the Sanitary District, and have arrived at the figures given in the table.

Q. Is that a usual method adopted by engineers in determining populations of the future in a metropolitan area?

A. Yes, sir, this method has been used and is one that is usual among engineers.

Q. You have there a table showing the population for the years 1890, 1900, 1910 and 1920.

A. Yes.

Mr. Adcock: I offer that in evidence as Pearse Exhibit 4 of this date.

(Table produced by witness for the years 1890, 1900, 1910 and 1920, offered in evidence, was marked Pearse Exhibit 4, April 25, 1923, and is hereto attached.)

Q. Have you a table which shows the populations for the future, 1930, 1940, 1945, 1950, 1955 and 1960, including also the year 1920?

A. Yes, sir, that table has been prepared. (Producing same).

[fol. 364] Mr. Adcock: I offer that in evidence as Pearse Exhibit 5 of this date.

(Table for the years 1920, '30, '40, '45, '50, '55 and '60, offered in evidence was marked Pearse Exhibit 5, April 25, 1923, and is hereto attached.)

Q. What was the total load upon the Main Channel in 1920, expressed in population, and what was the human population and the industrial load expressed in equivalent human population?

A. These loads are shown in the table which I have prepared based on the census populations and the projected population for the human load, and based upon our surveys for the industrial load expressed in equivalent population.

Q. And you have prepared an exhibit showing that?

A. Yes.

Mr. Adcock: I offer that in evidence as Pearse Exhibit 6 of this date.

(Table described by witness, offered in evidence, was marked Pearse Exhibit 6, April 25, 1923, and is attached hereto.)

Q. What estimates have you made covering the same propositions for the years 1930, 1940, 1945, 1950 and 1955? Have you prepared a table covering that?

[fol. 365] A. The estimates for the years following 1930, and up are given in the Exhibit 6, following the figures given for 1920, for the totals there expressed.

Q. How did you get at this proposition, what method did you use as shown on those tables?

A. The method by which I have arrived at the population equivalent of the industrial wastes is based on the dissolved oxygen required to oxidize the putrescible matter in sewage. Continued research over many years in the laboratory of the Sanitary District has shown this to be a reliable and accurate measure of the strength of sewage, inasmuch as it utilizes exactly the same biological activities which are effective in the stream. By stream I mean the Canal, Desplaines and Illinois Rivers.

Essentially, the test depends on mixing with the sample sufficient standard water saturated with dissolved oxygen to supply enough dissolved oxygen to oxidize the organic or putrescible material, in five, ten or twenty days, as the case may be, and leave a small amount of oxygen over at the end of a period.

The amount of dissolved oxygen required is expressed in parts per [fol. 366] million. For purposes of comparison, a ten day period has been chosen in our work, inasmuch as 90 per cent of the oxidation of the putrescible material is generally completed in sewage within that period. Such a test is called the Biochemical oxygen demand, and has been widely used by the U. S. Public Health Service, the Sanitary District and other research workers, as being more delicate and expressive than the old line chemical determinations. In some instances we have used nitrate of soda, added in known amounts, in place of dissolved oxygen.

The first step in the study of our sewage was to determine the amount of dissolved oxygen required per capita to oxidize the putrescible matter in human sewage. Prior to the work of the Sanitary District this figure had never been determined. Experiments were made on the sewage at 39th Street Pumping Station during

the year 1914. This sewage was chosen because a thorough inspection of the area tributary showed no industrial wastes likely to upset the tests.

On 179 days, hourly portions were collected during the twenty-four hours and daily composites were made. These were analyzed. The flow of the sewage was measured. The population tributary was [fol. 367] estimated. From the data the average figure was determined that 100 grams of oxygen are required per capita to properly oxidize the human sewage, or 0.22 pounds. Subsequently other research chemists confirmed this figure to me personally.

The next step was to determine the amount of putrescible material requiring oxidation from the different industries. This was done from time to time as follows:

The Packingtown and Union Stock Yards situation was investigated in the summer of 1917 between July 9, and October 6. At that time thirty firms were actively engaged in the packing and allied industries, in addition to the Stockyards. All of these houses were examined, and the flow gaged and analyzed from forty-one outlets, besides the public sewers, and certain outlets from the Stockyards. In all cases (except three of the smaller houses where the examination lasted two days) the sampling and gaging continued a week, night as well as day.

The flow was read as frequently as every ten minutes in most cases. For analysis, individual portions were taken every ten minutes and combined into hourly composites, which in turn were combined into [fol. 368] day or night composites, weighted according to the flow.

I mentioned the fact we made day and night composites, because there was a marked difference in the flow, in the strength day and night, as well as in the quantity.

From the determination of the biological oxygen demand and the flow, the total oxygen requirement was calculated. Based on the 0.22 pound per capita, the effect of the Stockyards and Packingtown was found to be practically 1,000,000 people. This investigation alone cost \$5,661.97, an amount which was reimbursed to the Sanitary District by the packers.

For the Tannery industry, the investigations made between 1911 and 1919, gave a rough indication of the equivalent. However, the most detailed survey was made in the summer of 1921, when twenty tanning houses were inspected. For each house, the flow was gaged and analyzed, the work being done substantially in the same manner as for the Packinghouse survey. The determination of the biological oxygen demand and the flow from the houses showed a total oxygen requirement equivalent to 70,000 people, on a normal hides capacity rating. In addition, seven wool pulleries and three [fol. 369] wool scouring houses were examined.

For the Corn Products Refining Company, the investigations were made in December 1921, and January and February 1922, in connection with the testing station then operated on the Corn Products wastes. The flow was gaged and sampled throughout the twenty-four hours, analyses being made on twenty-four composites. The result-

ing oxygen demand showed that the population equivalent was 411,000 people, at that time when a grind of 64,500 bushels was being made. Since that time the grind has increased.

Q. What was the designed capacity of the Main Channel of the Sanitary District?

A. The Sanitary District Channel in the main section was designed upon the assumption that the runoff of the Chicago River would not exceed 10,000 cubic feet per second, and could therefore be diverted from the Lake by a channel having that hydraulic capacity.

Q. That is reversed at all times?

A. Reversed at all times, yes, sir.

Q. If the diversion from the Lake is limited to 4,167 cubic feet per second, what effect will this have upon the problem of protecting the water supply?

A. The likelihood of overflow into the lake is very much increased, [fol. 370] with a result that pollution of the water supply is likely to occur, which will be severe. This is due to the fact that the intercepting sewers as designed cannot be made large enough to carry more than twice the dry flow in 1950; hence overflows will come into service, at times of storm, spilling sewage into the branches of the Chicago River. Consequently, with any reversal of the flow, storm water and sewage mixed will fill the river and be swept into the Lake.

Q. What methods would be necessary to pursue, in order to protect the water supply, in the event of the reduction of diversion?

A. It does not seem safe to me to rely entirely upon chlorination of the water supply for protection, where a water would be exposed to sudden and so-called explosive pollution. In my experience, the only adequate and certain protection would be filtration, accompanied by chlorination, as a finishing process.

Q. What is the extent of the use of water for domestic purposes now, and what do you estimate it in the future?

A. I have prepared an estimate of the use of water at the present time in the city of Chicago, that is as of 1920; and also for 1945 and 1955. These estimates have been checked with those of the Water [fol. 371] Bureau of the City of Chicago, and are in substantial agreement.

Q. That is the pumpage practically, isn't it, Mr. Pearce?

A. Yes, sir, that is practically the pumping.

Q. That has nothing to do with the diversion from the lake by the Sanitary District?

A. It has nothing to do with that.

Mr. Adcock: I offer in evidence this table that the witness has just presented, as Exhibit 7 of this date.

(Table of water consumption for 1920, 1945 and 1955, offered in evidence, was marked Pearce Exhibit 7, April 25, 1923, and is hereto attached.)

Q. Have you made any estimate of the cost of the construction and operation of plants for filtering the water supply of Chicago?

A. I have made a rough estimate of the cost of filtration, basing the capacity of the plant on the maximum daily rate, and including in round figures the low lift pumping stations.

In 1945, the cost would be for construction approximately \$90,000,000, or by 1955, a cost of \$106,500,000. These costs are in [fol. 372] round figures, and undoubtedly would require some additional expansions to increase the figures in a detailed survey, because of the necessity of the connections to the intake tunnels and other incidental work, which at present it is difficult to estimate. I present them as an indication of figures based on the cost of works in the past and present, to show the magnitude of the filtration expenditure.

Q. You say "a rough estimate," what do you mean by that?

A. I mean an estimate that may be within 15 or 20 per cent, based on round figures, calculated per million gallons for plants of like nature. They are figures that perhaps are not accurate enough to predicate a bond issue upon for a public vote, but are accurate enough to indicate the magnitude of the expenditure for handling the filtration of a city of the size of Chicago. Such a plant would be the largest filtration plant of its kind in the world, and would necessitate special designs and lay-out, so that the figures necessarily at the present moment are not contractors' estimates of what the work could actually be built for, but they are what we call preliminary estimates which may be accurate within 15 or 20 per cent, [fol. 373] thereabouts.

Q. What would be the probable annual cost of maintenance and operation of such works?

A. I believe that in 1945, the cost of maintaining and operating such filter plants for the city would exceed three million dollars, and that by 1955, the cost would have probably reached \$3,526,000, the additional cost being due to the additional service required for the population, and increased pumpage.

To these figures necessarily should be added interest charges and depreciation, to give the total annual costs. These costs cover labor, chemicals, supplies and general repairs necessary and incidental to the operation of such filtration plants.

Q. Based upon the project, the plan outlined by the ordinance of August 7, 1919, what populations would require treatment?

A. I have made a calculation based on the so-called "Colonel Judson plan,"—if I understand the question.

Q. Yes.

A. Which was designed to outline the program for the Sanitary District for the twenty-five years following 1920, to construct works which would reduce the load on the channel to one-half that exist- [fol. 374] ing in 1920. The figures are presented as follows:

For Conditions in 1920

By census, S. D. C. in 1920.....	2,986,000
Estimated Industrial Wastes.....	1,500,000
Total	4,486,000
One-half	2,243,000

Q. That is an equivalent population, human population?

A. Equivalent population expressed in the equivalent sewage from human beings.

Q. That is that represents, according to such estimates, half the waste passing from the southern terminus of the Main Channel of the Desplaines River?

A. Yes, sir. The figure of 2,243,000 is in round figures to the nearest thousand.

The equivalent population, under the Colonel Judson plan that would be required to reduce the sewage pollution to in 1945, outlined in 1945, the conditions are as follows:

For Conditions in 1945

Estimated S. D. C. in 1945.....	4,782,000
Estimated Industrial Wastes.....	2,000,000
Total	6,782,000
Deduct residual one half.....	2,243,000

Requiring treatment by..... 4,539,000

[fol. 375] 4,539,000 is the population which I understand would have to be provided for by treatment works, under this so-called Colonel Judson plan.

Q. That is during the period from 1920 to 1945?

A. Yes, sir.

Q. What flow of dilution water does this plan provide, or would this plan provide in 1945?

A. I have based the figures on the minimum legal dilution expressed in the Act of the Sanitary District, namely $3 \frac{1}{3}$ cubic feet per second per thousand population, and on that base I find the population of 2,243,000 requires 7,500,000 cubic feet per second, in round figures, for dilution. From the sewers there may come a flow which we have assumed to be 346 gallons per capita per 24 hours for a population of 4,782,000 in 1945, which would give a flow of 2,482 cubic feet per second, making a total flow through the channel of diversion from the lake, and of water supply coming through the sewers of practically 10,000 second feet; a difference of only a few unit second feet, so that it rounds out to the 10,000 second feet.

Q. If by the year 1945 the flow were reduced to 4,167 second feet, on this basis, what population would that flow accommodate, or equivalent population?

[fol. 376] A. On the assumed basis of the minimum legal dilution of 4,167 cubic feet per second, at $3\frac{1}{2}$ cubic feet per second per thousand population, is equivalent to 1,250,000 people. In 1945, the total population equivalent, both human and industrial is estimated at 6,782,000. The difference, or 5,532,000 people would require treatment. In 1945, this means 993,000 more people than would be required under the Colonel Judson plan.

Mr. Fleming: The testimony now being presented, as I understand it, is presented merely for the enlightenment of the court in connection with the character of the decree he shall enter.

Mr. Adcock: Yes, and they are matters that were brought out in the argument of the motions; and are pursuant to the written motion presented.

Mr. Fleming: My objection specifically is this: I object to the re-opening of the case on any of the issues; the elaboration of any of the testimony on any of the issues in the original case. In that case the record has been made, the testimony heard, and an informal opinion rendered by the trial court. And to all intents and purposes, disposition has been made of this case, and the only matter pending now is the question of the form of the decree which should [fol. 377] be entered.

It is my understanding it was Judge Carpenter's suggestion that there was no objection to taking testimony insofar as the presentation into this record of the ordinances of the Sanitary District was concerned, and the testimony, moreover, on the subject of the construction of these plants. My stipulation, in any event, was limited to those two propositions. I could not stipulate nor agree to any further testimony at this time; testimony introduced as to the merits of this case.

Mr. Adcock: I want to say in behalf of the defendant, there isn't any attempt to re-open any of the issues that were presented in the original case. This testimony is in connection with the motions that were made, the form of the decree to be presented, in order to give the court the facts upon which he may act in determining the decree that he shall enter, and it is only for that purpose.

Mr. Fleming: I reserve the right to present objections to this, and to strike this—

Mr. Adcock: Strike any portions you want to under the terms of the stipulation, anything that is objected to on the ground of materiality, relevancy and competency; also under any other stipulation.

Mr. Fleming: That was the original stipulation.

Mr. Adcock: Yes.

Mr. Fleming: But this matter is something that is outside; the issues have been settled, the matters submitted to the court. This testimony of Mr. Pearse with respect to the back flow of the river, the flowing of the river into Lake Michigan in the event of reduction to 4,167, testimony of that character is something not within the authorization of the court, and certainly not within the stipulation between yourself and me.

Mr. Adcock: That we believe to be material in connection with the issues that we believe are now before the court, on the motions that were recently argued, and upon the question as to the decree that the court may enter; and it is for that purpose only we are offering the evidence. As far as I am concerned, I agree that the objections which counsel wishes to make may be presented to this testimony now, or at any time that he desires.

Whereupon an adjournment was taken to Thursday April 26th, two o'clock P. M.

[fol. 379] Thursday, April 26, 1923—two o'clock p. m.

Parties met pursuant to adjournment.
Present as before.

LANGDON PEARSE resumed the stand for further direct examination by Mr. Adcock and testified as follows:

Q. How long would it take, probably, to build these additional works for the 993,000 people?

A. I estimate not over ten years.

Q. According to your estimates, what would be the human population and the equivalent in industrial wastes?

A. The human population would amount to 5,500,000 in 1955, and the industrial wastes 2,200,000, making a total of 7,700,000.

Q. What population would require treatment then by 1955 on the reduction of flow to 4,167 second feet; also the increase over 1945?

A. The figures given previously may be developed as follows: The total population in 1955 we have estimated at 7,700,000; the total [fol. 380] population in 1945, at 6,782,000, making a difference of 918,000 population, as the growth in the ten years.

If you take the total in 1955, namely 7,700,000 and from this deduct the population equivalent to the 4,167 cubic feet per second, namely 1,250,000, you have as a difference as of 1955 a population of 6,450,000.

Under the Colonel Judson plan as mentioned before, the population requiring treatment in 1955 would be 5,457,000, the difference then between the two being 993,000 people.

Q. What is the cost of the artificial sewage treatment program, under the plan of the ordinance of August 7, 1919, which we will call the Colonel Judson plan for convenience? Have you made an estimate of that.

A. We have made an estimate of the cost. The sewage treatment program based on this plan was estimated in 1920 to require directly an expenditure for sewage treatment of \$104,335,000, out of a total program of over 106,000,000. I say over \$106,000,000 because in addition to the \$104,000,000 would be the other items such as regulating works, bridges over the Main Channel, and dredging of the [fol. 381] Calumet River, which amount to \$7,250,000. Of the total as estimated, over \$9,490,000 has been spent or put under con-

tract to date, thus leaving a total of about \$94,845,000 still to be expended.

Q. The amount of approximately \$9,000,000 there which you have stated, has been expended since 1919 or 1920, has it, or been contracted for?

A. Has been either expended or contracted for since 1920.

Q. That is when you say "contracted for" that means under actual contract?

A. Yes.

Q. That is contracts let and in performance?

A. Yes.

Mr. Fleming:

Q. How much was that?

A. \$9,490,000, that is under contract or completed, during the period from 1920 to date. The cost of each project is indicated in the exhibit, as well as the year.

Mr. Adcock:

Q. Indicated on an exhibit or tabulation, which you have prepared here?

A. Yes, sir.

Q. And which you hand me?

[fol. 382] A. Which I hand you, yes.

Q. You have made up these figures, or they have been made under your direction, have they?

A. These figures were made up under my direction, and represent the combined judgment of our office.

Mr. Adcock: The tabulation which you have handed me bears the legend, "The Sanitary District of Chicago estimated costs of sewage treatment projects and necessary construction work for period 1922-1845", and I will offer that in evidence as Pearse Exhibit 1 of this date.

(Blue print, estimated cost of sewage treatment projects and necessary construction work 1922-1945, offered in evidence, was marked Pearse Exhibit 1, April 26, 1923, and is hereto attached:)

Q. What progress does this schedule of progress call for or contemplate, both on new work and extension of existing works?

A. We based this schedule on the following assumptions as to the progress that might be made. I would make this explanation, however, that this general program was worked up in 1922, that is not 1923, and we estimated then that the North Side work would [fol. 383] be started in 1922. The plans were practically ready last fall for the first contract of that plant, but owing to the discussion with Evanston over the location of the site, the work has not actually been put under contract, but the program is outlined to start on the North Side plant in 1922, and completed by 1928.

Q. You say "discussion with Evanston," do you mean then that there were objectors as to the site? You have a site there now?

A. The District has acquired approximately 200 acres at Oakton Avenue and the North Shore Channel for the purpose of a site. This site was acquired about two years ago. Last year, when it was announced that we were prepared to start work on the plant, objections were raised by various Evanstonians, and only to-day a large delegation was in the office before a public hearing of the Trustees, protesting against the use of that site, and alleging possible damage to the property values in Evanston.

The Trustees have indicated as yet no decision in the matter, but have been investigating very seriously the entire question since last October. The change in the Board in December re-aligned some of the committees. We expect a decision shortly, and orders to proceed in one way or another on actual construction.

Q. As I understand the proposition they bring up is that they want to annex about 2,500 acres to Evanston, is that correct?

A. The reason for the objection is that Evanston has expressed a desire to annex 2,500 acres west of the Channel, extending out towards the north branch of the Chicago River north of Oakton Avenue; and the claim is made that the location of this plant will injure the desirability of that locality for the best class of residential buildings.

I would add this, however, that on this north side project we have already built five miles of sewer from Sheridan Road south to Oakton Avenue, so that the northwest line of the intercepting sewer is completed and ready to hook into the pumping station. And we have completed preliminary plans for the work from the south, and have already started on the plans for re-modeling Lawrence Avenue, so that the sewage that now passes to the river through the Lawrence Avenue conduit from the Lincoln Park region will be diverted to our interceptor.

Q. The program of the Evanstonian objectors is that you should [fol. 385] move this plant out several miles, at a cost of something like \$5,000,000 for sewer, is that right?

A. Yes, sir. The suggestions of Evanston are that we can move the plant five miles or more to the West, which would increase the sewer cost of the project at least a million and a quarter a mile for about four miles anyway, as a minimum. That is five million dollars and this would probably add to the operating expenses for pumping the sewage approximately \$100,000 a year.

Q. And the land, the 2,500 acres, is worth about \$1,000 an acre.

A. I have been informed that that land is worth about \$1,000 an acre. Our Board paid \$1,500 an acre for the site of the treatment plant.

Q. You haven't finished your answer to the previous question?

A. No, sir. In our schedule, we further assume that the Corn Products plant could be started in 1925, and completed in 1927. I purposely allowed three years there for legal conditions, to arrive at an agreement with the Corn Products, because in our experience with the packers, after we had outlined the engineering plans for doing [fol. 386] ing the work, that overcame the engineering objections,

we have been approximately four years negotiating as to the legal difficulties; and negotiating to arrive at an agreement under which the work could be prosecuted.

For the Stock Yards project, we allowed for a start in 1925, and assumed it would be completed in 1932. In making this allowance, we assumed that legal negotiations would take at least two years: that the design of the sewers and works would be done by 1924, and the construction of the sewers, pumping station, screens, and the first unit of aeration tanks completed in 1926. After operating for one year, a year is allowed for the design and contract plans for the entire plant, and a year for necessary legal negotiations. The plant is assumed to go under construction in 1929, and to be completed in 1932.

I would explain this arrangement was made, because when Mr. W. B. Richardson, representing the packers, and myself representing the District brought in a report outlining the engineering method of proceeding, in 1917, we made a recommendation that the work be done by gradual steps, first to construct the sewer, pumping stations and screens for the entire works. Mr. Richardson [fol. 386½] differed with me and said we ought to have the screens only for one unit, that is about one thirtieth of the entire flow, and then we both agreed that the activated sludge plant recommended by both of us as to process should be built gradually, in order to demonstrate to the packers on a working scale of at least a million and a half gallons per day, the entire feasibility of the process.

Since that time, I have taken the position that the size of the plant to start might be markedly larger, as we know more of the process to-day, and have been operating a plant at Maywood for over eight months.

Q. You have a little different situation as to the sewage at the Stock Yards from the one you have with the human sewage in Maywood, don't you?

A. The sewage is much stronger at the Stock Yards, expressed in biological oxygen demand. The sewage in the Stock Yards will run from 500 to 1,000 parts per million, as against 125 to 150, not over 200 in Maywood.

The amount of suspended matter in the Stock Yards will run from 3,000 to 4,000 pounds of dry matter to the million gallons, [fol. 387] whereas at Maywood we have 1,000 pounds. In other words, there is three to four times as much solid to be handled.

Further, with the screens at the Stock Yards, we estimate we can take out about 1,000 pounds of dry material to the million gallons, whereas at Maywood we are only taking out 200 pounds a day for 3,000 gallons. That is 60 pounds of wet material with 80 per cent moisture, or 16 pounds of dry material to the million gallons.

The Stock Yards sewage is one of the strongest sewages in the United States produced on such a scale, and is full of fresh organic matter, blood, particles of meat, hay, straw, and undigested contents of cattle paunches, hogs and other animals.

Q. Has any practical, satisfactory method been developed for the

reduction and disposition of the sludge coming from these activated sludge plants?

A. I feel that a reasonable program of handling has been devised, namely to de-water the sludge, which in its original form contains about 99 per cent of water; reduce that to 80 per cent or less by filter process, with the addition of either an acid or a coagulen like sulphate of alumina, and then take the solids with less than 80 per [fol. 388] cent of moisture and dry them in a rotary heat drier. They will then be in a form containing ten per cent of moisture, capable of passing through an eight mesh sieve, and suitable for sale in the market as fertilizer. We have been offered by at least two responsible firms the amount of five dollars and ten dollars per ton f. o. b. cars for Chicago for such material, to be used in mixing fertilizer for the Southern market, or for truck farms either in the East or the Ohio Valley.

Q. That has just been recently worked out?

A. That has been worked out in the last two years. In addition, the city of Houston has been selling similar material for eight dollars a ton for use in the Cotton Belt in the South, prepared in much the way that I have indicated.

The City of Milwaukee is installing a plant now to handle the sludge in exactly this fashion.

Q. What other project have you there that you have considered, and what is the time of construction?

A. In order to build up a sufficient treatment to meet the requirements of the Colonel Judson program, or a more elaborate program, we have had to plan the construction of the so-called West Side Project, including the sewers, and a plant which, for the purposes [fol. 389] of this estimate, we have assumed would be a settling plant to remove all the solids which may settle in the Channel. The construction of this plant has been assumed to begin in 1932 and to be completed in 1940.

Further, for the South West Side, we have laid out a similar program for treatment, including intercepting sewers and a settling plant, the construction to start in 1935 and to be completed in 1945.

Besides the new work which I have mentioned, viz: The North Side, West Side and South West Projects, the extension of existing projects will require attention in the life of the program.

The Desplaines River sewage treatment works, which has been in operation since August 1st, 1922, will need extensions in 1924 to take care of the increased population.

The Calumet treatment works, which has been in operation since October 1922, will need an extension of the tanks, and we have assumed an addition of sprinkling filters to produce a higher grade effluent than we were supplying, in the year 1930.

[fol. 390] We have further allowed for the extension of the North Side treatment works, assuming that they were completed in 1928, in the year 1931.

Q. What population does this program cover?

A. As originally outlined the program covers an equivalent population of 4,251,000, taking the Imhoff tank treatment as the equiv-

alent of one-third complete treatment. This is within five per cent of the figure set for 1945, as outlined by the Colonel Judson plan. This method of handling was assumed by settling the sewage which was not given complete treatment, in order to retain all the settling solids.

I would explain that the reason for presenting the material in this shape is, we have to construct certain intercepting sewers to take out the sewage and carry it to certain designated points for treatment. Having done so, those sewers serve for a certain population, and we have taken the tributary populations and added them together in order to supply a project that would come approximately to the population set by the plan. In order to bring it exactly to the plan, we would have to provide a little additional treatment, as I remember, because I think the figure of 4,251,000 is a little lower than the [fol. 391] amount called for, which would of course increase the expense of the construction.

I did not endeavor to bring it out exactly by taking the per capita figures and equating them by slide rule, but have left them in this shape to show exactly the projects that would be developed, and what they would accomplish.

Q. What change of construction program would be required if the contemplated diversion were cut to 4,167 c. f. s. by 1945?

A. If the flow were cut to 4,167 c. f. s., it would be necessary, we believe, by 1945 that the West Side plant, instead of being constructed with settling tanks would be equipped for complete treatment, probably by activated sludge. We would still leave the South West plant as a settling plant. Such a program would provide in the year 1945 for the population equivalent of 5,328,000, which comes within four per cent of the figures set.

The same explanation would apply here as made in the previous answer, namely that in order to come out exactly to the population set by the population computations, sufficient additional treatment would have to be provided on one plant by sprinkling filters or other [fol. 392] means, to bring up the total, which can be done, but would increase the amounts of the estimates.

The additional construction cost necessitated by the cut in diversion would exceed \$16,800,000 if carried out by 1945. I have my doubts whether this could be done at the rate of progress that is necessitated by the methods of administration in our work and the financing, judging by past experience.

I have therefore estimated that in order to finance the work, cover the legal requirements and the like, somewhat more time would be required than on the previous work, which has been taken to be a period of ten years. In the interval from 1945 to 1955, in which the extent of that cut would be made, working on our assumptions, there would have to be expended not only the sum of \$16,800,000 as noted, but a further sum roughly estimated at \$16,710,000, making a total of \$33,510,000, to cover the growth in population, which would have to be treated, as well as the difference required on account of the lowered diversion.

In addition to these figures, in accordance with a former answer, the filtration of the water supply of the City of Chicago would be [fol. 393] required, so that as of the year 1955, there would be added \$106,500,000 to the program requiring financing.

Q. That is the sewage treatment program you have outlined?

A. To the sewage treatment program, yes.

Q. Is the true cost of handling the additional population of 993,000 shown by your computation?

A. The true cost of the additional population is not shown by our method of computation outlined, because the method of assembling by districts indicates a comparative cost for handling the sewage with a reduced diversion, which is lower than it really is, if you take the per capita costs and multiply by the population. That comes in the method of assembling the projects and calculating the cost of intercepting sewers in this treatment.

Q. What do you estimate the per capita cost to be?

A. I have estimated the cost of the activated sludge plants with intercepting sewers as \$25 per capita, with an annual cost of around \$2.25 to \$2.75 according to the method of handling the sludge. I am therefore conservative in saying the cost in round figures on [fol. 394] account of this cut in diversion would add to the sewage treatment program approximately \$25,000,000 based on the actual per capita charges for construction, and \$2,250,000 for annual costs.

Q. Would there be any effect upon the cities other than Chicago?

A. If the diversion was cut to 4,167 cubic feet per second, I believe that there will be ultimately a heavy burden placed upon the cities and industries located on the Illinois River, particularly in the metropolitan area around Peoria and Pekin. While in 1920 the census population was only 88,207 for the two cities, there was in addition a starch works at Pekin grinding about 25,000 bushels of corn a day, equivalent to 158,000 people, besides other Corn Products industries about which little data could be obtained.

This equivalent population, through growth of industry as well as of population, I have estimated might exceed half a million in 1930. With the continued growth up to 1945, during low water, treatment may become necessary, making an additional burden upon the inhabitants of the State of Illinois. In 1920, the urban population on the banks of the Illinois River from Joliet to the mouth totaled 200,472.

Q. What expenditures have been made by the Sanitary District [fol. 395] for sewage treatment since 1909, for construction purposes?

A. I have assembled these expenditures in a table showing the amount spent year by year, which I hand you; these expenditures being taken from the books of the District and tabled.

Q. This table is entitled "Expenditures for Sewage Treatment since 1909, for Construction Purposes." You have assembled this, have you, from the records of the Sanitary District?

A. I have assembled this from the records of the Sanitary District and had them checked by our own clerical force, so that they are reasonably accurate.

Mr. Adcock: I offer that table in evidence as Pearse Exhibit 2 of this date.

(Table of expenditures for sewage treatment since 1909 for construction purposes, offered in evidence, was marked Pearse Exhibit 2, April 26, 1923, and is hereto attached.)

Q. Since January 1st, 1919, you have expended \$16,382,944, is that correct?

A. Yes, sir.

Q. That has been spent under your direction?

[fol. 396] A. This money was spent under my general direction, under the orders of the Chief Engineer who is in charge of the entire engineering department, and was spent in accordance with the plans and specifications drawn by my division of the engineering department.

Q. You made up a table showing the expenditures for sites?

A. I made up a table showing the expenditures for sites, a copy of which I hand you as an exhibit.

Mr. Adcock: I offer that table in evidence as Pearse Exhibit 3 of this date.

(Table of expenditures for sites for sewage treatment works up to 1921, offered in evidence, was marked Pearse Exhibit 3, April 26, 1923, and is attached hereto.)

Q. You made that up in the same way as the others, from the records of the District?

A. This table was made in the same way, from the records of the District, checking the amounts against the vouchers paid, and the dates against the orders of the Board printed in our proceedings.

Q. What expenditures have been made by the Sanitary District since 1909, for testing stations and experimental work?

[fol. 397] A. Since 1909, up to the end of 1922, there has been expended under my direction by our engineering and laboratory forces the sum of \$97,842, for construction and equipment on sewage testing work.

In addition to this sum, we have spent in the maintenance and operation of the works, including the operating of our laboratories and the other expenses chargeable to the investigations, the sum of \$563,815. This makes a total expenditure on our books for construction, equipment, maintenance and operation of \$661,657.

Q. Why was it necessary to do this?

A. When I first came with the District in 1909, the art of sewage treatment was less understood on a large scale than now. There was a transition period in the art; the old septic tank was in disfavor, as originally installed at Columbus. Experiments were found to be necessary, and were devised by men of the standing of Mr. Rudolph Hering, and others who studied the problems of the District, and had been connected with it since its inception in 1889.

We found the sewages we had to meet were so varied in strength and behavior that tests were needed to define the most efficient

method of treatment. Tests were needed in order to find how much [fol. 398] sewage could be treated with a given area of plant; for instance in sprinkling filters, how many hours were required for the settling of the sewage in settling tanks.

We saw very clearly that the problem ahead of the District in 1909, was a gigantic one, involving the largest sewage treatment works in the world, and involving the necessity of producing a high grade effluent for a large part of the sewage of the District.

In addition, we had to confront not only the human problem but the industrial waste problem of enormous extent, and at that time no solution was known for its treatment. Neither was the amount of the waste known. The period required for preliminary investigation was indefinite, but we knew that we had to study the sewage, not alone as to methods of treatment, but also to improve the methods of analysis.

The method I have explained of determining the oxygen consumption was one of our changes in method which has enabled us to express population equivalents. Short time tests we knew were of little value. Our experience had shown that at least a test running over the four seasons of the year was required, because the [fol. 399] operation of a sewage plant is different in the winter from the summer; and usually at the end of the year we had found improvements or changes in the studies that led us to continue.

Aside from the tests, surveys were required of the District. Preliminary plans had to be made; sites had to be secured, and then legal obstacles had to be overcome.

Our lawyers finally determined that the Act had to be amended, which was done in the last session of the Legislature, over two years ago now, whereby we were given the explicit right and command to build sewage treatment works, whereas prior to that time, I was informed that our right to establish complete works was in doubt and open to contest.

Q. That is they were built as incidental to the works of diversion, and supplementary to them, under the original theory, is that correct?

A. Yes, the opinions, I think during Mr. Adcock's incumbency as attorney, and prior to that time, were that whatever we did was merely an incident, and there might be a doubt if we had to condemn a site as to whether our powers would be seriously questioned, because we were acting more or less under implied powers, instead of actual, explicit powers.

[fol. 400] Q. How about your population figures there, with reference to the effect on loading of the Canal?

A. I regard the population figures as presented as very fair. They are calculated from census figures, which are as close as we can actually get them. We have had the advantage of the actual enumeration districts of the census. In representing the actual loadings on the Main Channel, we believe they may prove low rather than high, because of the fact we have made no allowance in the figures for the floating population in Chicago, and in particular for the Loop

District. In 1920, this was estimated at 250,000 people. Of these 250,000, some are commuters from within the boundary of the district, but many undoubtedly come from the outside, according to our figures.

The hotels and clubs we think may house 100,000 people. The increase in floating population we have determined to be approximately 50,000 for every decade, so that we believe by 1945 that there is an effect from the floating population which might be between 375,000 and 475,000, for which we have made no allowance in these estimates.

We have also made no allowance for any factor of safety, to take [fol. 401] care of the variations due to the variations in industry, or to extremely hot weather, which you may get in the summer time, that would upset our allowance of the effect of the water taken from the Lake, or for other contingencies.

Neither have we allowed for any extension of the boundaries of the district, which I believe will undoubtedly occur, as shown by our past experience. All these factors would tend to increase the expenditures for sewage treatment.

Q. And your cost figures, are they conservative?

A. I think the estimates of cost of construction are conservative. We based them on unit prices slightly lower than have prevailed in the last two years. The office experience in the Sanitary District during the last two years, and in fact since the beginning of the war, has indicated that the contractors that we have to deal with want more for doing the work than we as engineers generally estimate. I think in our experience in the last two years, if I am not mistaken in my recollection, we have in general received figures that are higher than the estimates we have made as engineers, along the lines indicated in my evidence.

I have further assumed that the general conditions of labor, and [fol. 402] of the material market, will continue. I have not attempted to estimate the possible changes that may occur in the stretch of twenty-five years.

Q. You have handed me a table here entitled "The Sanitary District of Chicago, expenditures for construction of sewage treatment works 1910-1922, showing the expenditures by years. You have made these figures from the records of the district, have you?

A. Yes, sir, I have had this table, which may be identified as Exhibit 4, prepared to show item by item the expenditures made from 1910 to 1922, on the different projects of the district applicable to sewage treatment. That is for intercepting sewers, pumping stations and sewage treatment works.

Mr. Adcock: I offer this table in evidence as Pearse Exhibit 4.

(Table of expenditures for construction of sewage treatment works 1910-1922 offered in evidence was marked Pearse Exhibit 4, April 26, 1923, and is hereto attached.)

[fol. 403] HENRY M. CHRISTIE, a witness called on behalf of the defendant, was first duly sworn by the Commissioner, and testified as follows:

Direct examination.

By Mr. Adecock:

Q. What is your full name?

A. Henry M. Christie.

Q. Where do you reside?

A. 4336 West 22nd Street, Chicago.

Q. Are you employed by the Sanitary District?

A. Yes, sir.

Q. How long have you been so employed?

A. With the exception of an interval in 1901-1902, and another interval in 1909-1910, since April 1892.

Q. What are your present duties with the Sanitary District?

A. Emergency work.

Q. Have you had any experience in accounting work?

A. Yes, sir.

Q. In the case of Duffy vs. Sanitary District, you did quite a lot of work, did you not, as accountant?

A. In June, on June 9, 1906, what was known as Waterpower Development Sections 1, 2 and 3 at Lockport were taken from the J. J. Duffy Company, and I was delegated by the Chief Engineer [fol. 404] to go down and take charge of the business end of the work, which continued the remainder of 1906 and all of 1907.

Q. Have you made any estimate of the present and future resources of the district, by way of bond issues and probable tax income as based upon the statute providing for the taxation by the trustees of the district, for levying taxes by the trustees of the district?

A. Yes, sir.

Q. Just state what you have done?

A. In March 1922, working with Mr. Raney, the present Assistant Chief Engineer, we compiled a table showing annually our expectations in income, consolidated with certain estimates of the Sanitary District Engineers as to a construction program; and brought that table down from 1922 to 1945 inclusive.

Q. Have you got that table here?

A. Yes (producing same).

Q. Now, will you take this table that you have just handed me, entitled "The Sanitary District of Chicago, composite statement estimating resources and liabilities under 1945 construction program": there are various columns there, various headings and figures, will you state what those different columns mean and how they were gotten up.

[fol. 405] A. Column No. 1 shows the years.

Column No. 2 shows the population increment as based on the rates of increase shown by the last decennial period.

Q. Shown by Mr. Pearse?

A. Shown by Mr. Pearse and taken from the same basis.

Column No. 3 shows the estimated valuation, assessed valuation as taken from information obtained from the Assessor's Office of Cook County, the increases being based on past experience.

Q. So that you start out with an assessed valuation of nearly two billion dollars in 1921, and you have an assessed valuation in 1945 of \$3,300,000,000?

A. Yes, sir. Column No. 4 shows the assessed valuation per capita.

Column No. 5 shows the future tax rate as taken uniformly at .40 of 1 per cent, this being assumed as the limit which the Sanitary District is likely to realize under the present conditions.

Q. You show 1921 as .36.

A. \$0.36, that is all we may obtain that year. The taxes for 1922 are spread on 40 cents.

Q. Actual.

A. Actual, spread at 40 cents.

[fol. 406] Q. The same as for 1923. That has not been determined.

A. That assume we can do as well as 40 cents.

Q. That has not been determined yet?

A. Column No. 6 shows the taxes for any one year based on the assessed valuation of the preceding year. That is the taxes spread for 1923 will not be collected until 1924, so we show in that column the actual collection of taxes in that year.

Q. And that is less a certain amount for loss, on account of delinquents and costs of collection?

A. Yes. I would like to explain, in that 40 cents we figure a loss of at least ten per cent. That was Mr. Ramey's and our judgment at that time. I read in the paper the other day about a much greater loss this year, and I verified that by calling up Mr. Jacob Lindheimer, the Assistant Treasurer of Cook County in charge of collections, to-day, and he informed me that the loss this year would be fully 12 per cent; that delinquents this year amounted to \$18,000,000 in all the public bodies in this county, so that the ten per cent in our judgment was not excessive at that time.

I would like to state too, in clarifying this: This statement was made in March 1922, and we estimated that the assessed valuation [fol. 407] would be \$1,870,000,000. When we got our returns, we found that there was a reduction of the actual valuation for the year 1922 to \$1,784,391,952.

Q. Now, you have column 7, bond issues.

A. Column 7, future bond issues, started in the year 1922 to provide the revenue necessary for the heavy construction program.

Column No. 8 shows the total gross revenues, and is the sum of the figures in columns 6 and 7, being the combined sum of the revenues derived from taxes and from sale of bonds.

Column No. 9 shows the amounts required each year to liquidate the present outstanding bonds. These are for old bonds that have been issued for prior work.

Column No. 10 shows the amounts required each year to pay the interest on the present outstanding bonds.

Column No. 11 shows the amounts required each year to redeem future bond issues, except for one issue, \$3,000,000, in 1921. The bonds are figured for redemption at the rate of 5 per cent per year. [fol. 408]

Column No. 12 shows the interest on outstanding bonds. The future issues are computed at the rate of $4\frac{1}{2}$ per cent per annum.

Column No. 13, shows the estimated cost of administration, and the ordinary expenses of maintenance and operation of the work of the Sanitary District, based on the experience of recent years.

Q. And also, as you get along down further, you take into consideration the increase due to the additional works.

A. The cost of increase, to provide for the operation of the different plants, yes, sir; to take care of the Desplaines plant going into commission in 1923, the Calumet in 1923, the Southwest and so on.

Q. And Column 14 is the total?

A. Total expenditures.

Q. Column 15 is the net revenue?

A. The approximate net revenue available for new constructions.

Mr. Adcock: I offer this table in evidence as Christie Exhibit 1 of this date.

(Table entitled "Composite statement estimating resources and liabilities under 1945 construction program," offered in evidence, was marked Christie Exhibit 1, April 26, 1923, and is hereto attached).

[fol. 409] Q. Have you made up a table showing the movement of iron ore during the year 1920 in reference to harbors, and the net tons moved, and if you have, state how you made that table up?

A. I have. I have a table showing the movement of iron ore during 1920, compiled from Part 2 of Chief of Engineers U. S. Army Report for the Fiscal Year ending June 30, 1921.

Q. And that table is made up merely from figures you have taken from that report, is that correct?

A. Merely a compilation of the figures taken from that report.

Mr. Adcock: I offer this in evidence as Christie Exhibit 2 of this date.

(Table showing movement of iron ore during 1920 offered in evidence, was marked Christie Exhibit 2, April 26, 1923, and is attached hereto.)

Q. Have you made up a table showing comparison of depths in certain channels and harbors at sundry elevations of the waters of Lakes Michigan, Huron, Erie and Superior?

A. Yes.

Q. And also showing the project depths under acts of Congress?

[fol. 410] A. Yes, sir.

Q. How did you do that?

A. This is a comparison of depths in certain channels and harbors at sundry elevations of the waters of Lakes Michigan, Huron, Erie and Superior, compiled from Bulletin No. 31, "Survey of Northern and Northwestern Lakes" issued by the U. S. Lake Survey office, Detroit Michigan, April 1922, and water level records furnished by the same authority.

Mr. Adcock: I offer this table in evidence as Christie Exhibit 3.

(Table of Comparison of Depths in certain channels and harbors at sundry elevations, offered in evidence was marked Christie Exhibit 3, April 26, 1923, and is hereto attached.)

Q. Have you made up a table showing a summary of statement of resources and expenditures of the Sanitary District of Chicago under 1922-1945 construction program?

A. I have.

Q. And that is taken from the figures you have presented, and [fol. 411] also from figures Mr. Pearse has presented, is that correct?

A. Yes, sir.

Mr. Adcock: I offer this statement in evidence as Christie Exhibit 4.

(Table summary of statement of resources and expenditures of the Sanitary District of Chicago, under 1922-1945 construction program, offered in evidence, was marked Christie Exhibit 4, April 26, 1923, and is hereto attached.)

Adjourned subject to notice.

[fol. 412]

PEARSE EXHIBIT 1

April 25/23

"An ordinance of the Board of Trustees of the Sanitary District of Chicago laying out and adopting a program for the construction and operation of works for the purification of or the removal of solids and organic and inorganic matter from sewage, trade waste, offall and other organic and inorganic matter so that within the period of the next twenty-five years not more than fifty per cent of the amount of said sewage and waste that is now passing into the Desplaines River from the main channel of the Sanitary District will at the end of such period find its way into said river. Such works are to supplement those constructed or in process of construction for the diversion of sewage and drainage arising within the limits of the Sanitary District of Chicago.

Whereas, the Sanitary District of Chicago was organized and now [fol. 413] exists under an Act of the General Assembly passed on

May 29, 1889, in force July 1, 1889, entitled, "An Act to Create Sanitary Districts and to Remove Obstructions in the Illinois and Desplaines Rivers," and Acts amendatory thereof or supplementary thereto; and,

Whereas, The said Act of the General Assembly provided for the construction and operation of the Main Channel of the Sanitary District, including adjuncts and additions thereto whereby the sewage and drainage of the City of Chicago and its environs should be diverted from Lake Michigan to the Desplaines river, together with a certain amount of water from Lake Michigan fixed according to the population of the District as it might exist when such Main Channel should be constructed and as the population might thereafter increase, to-wit: Twenty thousand cubic feet of water per minute for each one hundred thousand of the population; and the Board of Trustees of The Sanitary District of Chicago is directed by said Act of the General Assembly to operate said works specified with such diversion of water; and,

Whereas, Said Act of the General Assembly was passed and the works provided therein to be constructed were built in order to relieve the people of Chicago and environs of a serious menace to their health and lives arising by virtue of the pollution of Lake Michigan, the only water supply of Chicago by sewage passing into same by way of the Chicago and Calumet rivers and by way of sewers debauching directly into the lake at various points along Chicago's water front; and the said works were intended also to relieve the Desplaines and Illinois rivers of a serious condition of pollution due to a certain amount sewage and wastes of Chicago and environs passing into said river through the Illinois and Michigan Canal; and,

Whereas, The death rate per year from typhoid fever prior to the operation of the Main Channel of the Sanitary District at times equalled one hundred ninety per one hundred thousand of the population of Chicago, and its environs, which required the immediate construction and operation of works to relieve such condition; and,

Whereas, Immediately after the passage of said Act of the General Assembly of May 29, 1889, the Sanitary District was organized and thereafter commenced the construction of the Main Channel of [fol. 415] the Sanitary District, extending from Robey street and the West Fork of the South Branch of the Chicago river to the Desplaines river near Lockport, Illinois, a distance of thirty-two miles; and the work of constructing said Main Channel was carried forward with due speed until January 17, 1900, when the said Main Channel was placed in operation pursuant to the permit of the Governor of Illinois, in accordance with said Act, and the permit and consent of the Secretary of War of the United States; and the said Main Channel of the Sanitary District cost the people of Chicago and its environs many million dollars; and there was required for such construction the use of all the money that could be raised by the Sanitary District from taxation and by the issuance of bonds; and,

Whereas, The Sanitary District was compelled to construct and place in operation many adjuncts and addition to the Main Channel of the Sanitary District in order that the said Main Channel might accomplish the purpose for which it was constructed and there would thereby be constructed and placed in operation a complete and comprehensive system for a diversion of the sewage and drainage arising within the limits of the Sanitary District from Lake Michigan to the Desplaines river; and such works included the intercepting sewers and pumping stations on the North Shore and South [fol. 416] Shore of Chicago, the Calumet-Sag Channel, with its intercepting sewers, the enlargement of the flowage channel of the South Branch of the Chicago river and the West Fork of said South Branch, and the replacing of many old center-pier bridges with bascule bridges of modern type, and they included also many other works of similar character; and the construction of such works has largely engaged the resources of the Sanitary District, and

Whereas, the Works so constructed and placed in operation have caused a decrease in the death rate from typhoid fever per year in the City of Chicago and environs from an average rate of over seventy-five per one hundred thousand of the population for the ten years immediately preceding the opening of the drainage channel, so that now the death rate from typhoid fever is less than one-half of one per one hundred thousand of population; and,

Whereas, The Board of Trustees of the Sanitary District has recognized that by reason of various conditions existing, such as trade wastes and other materials passing into its channels and the inability to obtain at all points the necessary amount of water to dilute the sewage, thus causing local nuisances, that works should be constructed [fol. 417] and operated to remove a material portion of organic and inorganic matter from human sewage, and also to remove and eliminate a material portion of trade wastes and other materials so that the amount of organic and inorganic matter in sewage and the amount of trade wastes and other materials passing through the Main Channel of the Sanitary District into the Desplaines river would be materially diminished; and The Sanitary District of Chicago has for such purposes carried on experiments and investigations to ascertain the best method to accomplish such results; and it has constructed at Morton Grove, Illinois, an Imhoff tank for the removal of a certain portion of the solids from the sewage of the Town of Morton Grove, and is constructing in connection with such Imhoff tank a sprinkling filter to further purify the sewage of said town; and the Sanitary District is constructing an activated sludge plant with necessary intercepting sewers for the collection and purification of the sewage of the Towns of Riverside, Maywood, River Forest and others, the sewage of which towns is now passing into the Desplaines river; and the Sanitary District has authorized the condemnation of one hundred acres of land near the Calumet sewage [fol. 418] pumping station at 125th Street and Michigan avenue, Chicago upon which site there is to be constructed an artificial sewage disposal plant for the removal of organic and inorganic matter from human sewage and wastes that may pass into the Calumet in-

intercepting sewer; and the Sanitary District of Chicago has, in the Stock Yards District, to take care of the trade wastes of Packing-town, acquired a site for purification works to be constructed thereon to remove trade wastes and organic and inorganic matters from human sewage now finding their way from that locality to the Main Channel of the Sanitary District; and the South Park Improvement Project provides for the setting aside of sufficient land for the construction of purification works for the sewage and wastes collected at 39th Street and Lake Michigan by the intercepting sewers converging at that point, which intercepting sewers serve a population of approximately five hundred thousand people, and,

Whereas, The Chief Engineer of The Sanitary District of Chicago has made investigation of the amount of trade wastes and other wastes requiring pure water to oxidize same, now being discharged through the Main Channel of the Sanitary District into the Desplaines river, [fol. 419] and the Chief Engineer has found and the Board of Trustees of the Sanitary District believes that the amount of such wastes is approximately equal, if it does not exceed, the amount of human sewage now passing into said Main Channel and through same to the Desplaines river; and that there is required to oxidize said wastes and render same innocuous and nonputrescible, as much or more water from Lake Michigan than is required to oxidize and render innocuous and nonputrescible the human sewage of the present population within the territorial limits of The Sanitary District of Chicago; and by reason of such wastes passing into said channel land thereby into the Desplaines river, the works of the Sanitary District do not fully accomplish the purpose designed and nuisances are created at various places, which nuisances should be abated; and,

Whereas, It is the recommendation of the Chief Engineer of the Sanitary District that works should be constructed and operated to supplement the diversion works of the Sanitary District constructed or in process of construction whereby the amount of human sewage and the amount of trade wastes and other material should be continuously diminished from year to year so that at the end of a period [fol. 420] of twenty-five years at least only one-half of the amount of sewage, including all wastes that is now passing into the Desplaines river from the Main Channel of the Sanitary District shall enter same by way of said Main Channel; and the Board of Trustees of the Sanitary District believes that within the period of four years works of such character can be constructed and placed in operation to materially diminish the amount of such sewage and wastes passing into the said Desplaines river, as aforesaid; now, therefore be it ordained by the Board of Trustees of the Sanitary District of Chicago:

Section 1. To supplement the works of The Sanitary District of Chicago now constructed or in the process of construction for the diversion of sewage or drainage, and to aid said works in better accomplishing the purpose for which they were constructed, the Sanitary District does hereby lay out and adopt a program for the construction and operation of works for the purification of sewage or the

removal of organic or inorganic matter from human sewage and the removal of trade wastes and other wastes and for the carrying on of such work at such a rate as continuously after the lapse of four [fol. 421] years to diminish the amount of sewage including all wastes passing into the Desplaines river by way of the Main Channel of The Sanitary District of Chicago, so that within the period of twenty-five years such purification works shall be constructed and in operation, that the amount of such raw sewage and wastes so passing into said Desplaines River shall be at least fifty per cent less than that passing now.

Sec. 2. The Chief Engineer and the Attorney of the Sanitary District are hereby directed to take such steps as may be necessary to carry forward the foregoing program, and the Chief Engineer is directed to report to such officers of the United States and the State of Illinois as may be interested, the progress made from time to time in carrying out said program.

Sec. 3. The foregoing preamble to this ordinance is hereby adopted and made a part of same.

Sec. 4. This ordinance shall be in full force and effect from and after its passage and adoption.

[fol. 422] STATE OF ILLINOIS,
County of Cook,

The Sanitary District of Chicago, ss:

I, William W. Smyth, Clerk of the Sanitary District of Chicago and keeper of its official records and seal, do hereby certify that the attached and foregoing is a true and correct copy of an ordinance of The Sanitary District of Chicago, entitled: "An Ordinance of the Board of Trustees of The Sanitary District of Chicago Laying Out and Adopting a Program for the Construction and Operation of Works for the Purification of or the Removal of Solids and Organic and Inorganic Matter from Sewage, Trade Waste, Offal and Other Organic and Inorganic Matter so That within the Period of the Next Twenty-Five Years Not More Than Fifty Per Cent of the Amount of Said Sewage and Waste That Is Now Passing into the Desplaines River from the Main Channel of the Sanitary District will at the End of Such Period Find Its Way Into said River. Such Works are to Supplement Those Constructed or in Process of Construction for the Diversion of Sewage and Drainage Arising Within the Limits of The Sanitary District of Chicago," which said ordinance was passed by the Board of Trustees of The Sanitary District of Chicago at a regular meeting held on Thursday, August 7, 1919, and is now in full force and effect.

In witness whereof, I have hereunto set my hand and affixed the seal of The Sanitary District of Chicago this 27th day of May, A. D. 1922.

(Signed) Wm. W. Smyth, Clerk of the Sanitary District of Chicago. (Seal.)

April 25/23

An Ordinance of the Board of Trustees of the Sanitary District of Chicago offering and agreeing to defray the expense of the construction of works in one or more of the outlets of the Great Lakes to compensate for any diminishing levels of the Great Lakes and connecting waters due to the diversion of 10,000 cubic feet of water per second from Lake Michigan by the Sanitary District of Chicago and authorizing the attorneys of the Sanitary District in the suits pertaining to said diversion now pending in the District Court of the United States for the Northern District of Illinois, Eastern Division, to make and present such offer and agreement in open court.

Whereas, There are now pending in the District Court of the United States, for the Northern District of Illinois, Eastern Division, two suits in equity instituted by the United States against the Sanitary District concerning the withdrawal of water from Lake Michigan by The Sanitary District of Chicago. The first suit was [fol. 425] instituted in the year 1908 and pertains particularly to the construction and operation and withdrawal of water from the operation of the Calumet Sag Channel, an adjunct of the main channel of The Sanitary District of Chicago. The second suit was instituted in the year 1913 and seeks to enjoin the Sanitary District from withdrawing from Lake Michigan, through its various channels, including the Calumet-Sag Channel, then and now under construction, more than 4,167 cubic feet of water per second. The said suits have been tried together and submitted together upon briefs; and,

Whereas, The Honorable Kenesaw M. Landis, one of the Judges of said District Court of the United States, for the Northern District of Illinois, Eastern Division, before whom said cases have been pending, did recently render an opinion or direction for the entry of a decree in said cases, in substance, to enjoin the Sanitary District of Chicago, defendant in said cases, from withdrawing from Lake Michigan more than 4,167 cubic feet of water per second; and,

Whereas, Various reports have been submitted pursuant to acts of The Congress of the United States by the Engineer Corps of the [fol. 426] U. S. A. finding that the claim of injury to navigation arising from the lowering of lake levels be-ause of the diversion from Lake Michigan of water at Chicago to the extent of 10,000 cubic feet of water per second, may be compensated for by the construction of fixed weirs or works of similar character, or by the construction and operation of movable dams in the St. Clair, Niagara and St. Lawrence Rivers, or one or all of them, and that the expense of constructing said fixed weirs in the St. Clair and Niagara Rivers would, at the time the report was made, not exceed \$475,000; and it was recommended that if The Sanitary District of Chicago should defray the expense of constructing such works, then they should be

maintained by and at the expense of the United States; and, if such works were constructed and placed in operation, thereby the ground of the United States for securing the injunction herein would be removed; and,

Whereas, It is the opinion of the Board of Trustees that if the Sanitary District is enjoined from taking more than 4,167 cubic feet of water per second from Lake Michigan for sanitary purposes, it will be necessary to expend, in the construction of works to artificially purify sewage, supplement and aid the works diverting 4,167 cubic feet of water upwards of \$150,000,000, and the operation and maintenance of the same will exceed upwards of \$5,000,000 per annum; and it is, further, the belief of the Board of Trustees of The Sanitary District of Chicago that it is doubtful whether such works, with said limited withdrawal of 4,167 cubic second feet of water will provide for the people of The Sanitary District of Chicago which includes the population of Chicago and its environs, a safe drinking water supply, for the reason that it would be impossible, with said limited withdrawal, to keep the Chicago River at all times reversed so that it would not flow into Lake Michigan, carrying with it a large amount of sewage and drainage, and it is doubtful whether such purification works would accomplish practical results.

Now, therefore, be it ordained by the Board of Trustees of the Sanitary District of Chicago:

Section 1. The Sanitary District of Chicago does hereby offer and agree to defray the expense, and pay to the United States Government the cost of constructing and maintaining works to be installed [fol. 428] at the outlet or outlets of any of the Great Lakes to compensate for any diminishing levels of the Great Lakes and connecting waters, due to a diversion or withdrawal from Lake Michigan of 10,000 cubic feet of water per second by The Sanitary District of Chicago through its various channels and diversion works in the event The Sanitary District is not enjoined from diverting from Lake Michigan less than 10,000 cubic seconds feet of water.

Section 2. The said offer and agreement contained in Section 1 hereof is intended to embrace and cover not only the expense of constructing and maintaining fixed weirs or dams described in the report entitled "Final Report of Waterway from Lockport to the Mouth of the Illinois River," House of Representatives Document, No. 762, Sixty-third Congress, Second Session, but also any other works of similar character that may be planned or provided for by the Congress of the United States or by competent Governmental authority or works known as "regulating works," consisting of movable dams or dams that may be moved from time to time, that may be planned or provided for by the Congress or other competent authority, such works having for their purpose compensation for any diminishing levels of the Great Lakes or connecting waters due [fol. 429] to a diversion at Chicago of 10,000 cubic second feet of water, and the said The Sanitary District of Chicago offers and agrees

to pay to the United States the expense of constructing and maintaining such works whenever the United States shall provide for such construction and make request for the payment of the amount of money necessary to construct and maintain the same.

Section 3. The attorneys for The Sanitary District of Chicago, in said two suits above described, wherein the United States is complainant and The Sanitary District of Chicago is defendant, on behalf of The Sanitary District of Chicago, are hereby authorized, empowered and directed to present and make said offer in open court in said causes, or in any other manner that the said attorneys may deem proper.

Section 4. The preambles to this Ordinance are hereby made a part of same and this Ordinance shall take effect and be in force from and after its passage.

[fol. 430] STATE OF ILLINOIS,
County of Cook,
The Sanitary District of Chicago, ss:

I, William W. Smyth, Clerk of The Sanitary District of Chicago and keeper of its official records and seal, do hereby certify that the attached and foregoing is a true and correct copy of an ordinance of The Sanitary District of Chicago, entitled: "An Ordinance of the Board of Trustees of the Sanitary District of Chicago Offering and Agreeing to Defray the Expense of the Construction of Works in One or More of the Outlets of the Great Lakes to compensate for Any Diminishing Levels of the Great Lakes and Connecting Waters Due to the Diversion of 10,000 cubic feet of Water per Second from Lake Michigan by the Sanitary District of Chicago, and Authorizing the Attorneys of the Sanitary District in the Suits Pertaining to Said Diversion Now Pending in the District Court of the United States for the Northern District of Illinois, Eastern Division, to Make and [fol. 431] Present Such Offer and Agreement in Open Court," which said ordinance was passed by the Board of Trustees of The Sanitary District of Chicago at a regular meeting held on Thursday, July 8, 1920, and was duly approved by the President of said Board of Trustees and is now in full force and effect.

In witness whereof, I have hereunto set my hand and affixed the seal of The Sanitary District of Chicago this 27th day of May, A. D. 1922.

(Signed) Wm. W. Smyth, Clerk of the Sanitary District of Chicago. (Seal.)

[fol. 432]

PEARSE EXHIBIT 3

Chi. R., 140

May 24, 1921.

The Division Engineer; the Chief Engineers, U. S. Army, Washington, D. C.:

Cooperation with the Trustees of the Sanitary District of Chicago
in Making a Study of Sewage Purification

1. Referring to the letter of the Chief of Engineers dated March 25, 1920 (E. D. 28918), instructing me to cooperate with the Trustees of the Sanitary District of Chicago in making a study of sewage purification, I desire to submit the following report of progress:

2. The history of the controversy between the United States and the Sanitary District may be briefly reviewed as follows:

Under a permit issued by the Secretary of War on December 5, 1901, the Sanitary District was authorized to divert through the drainage canal a maximum of 4,167 second feet of water from Lake Michigan for sanitary purposes. Since the permit was granted the Board of Trustees of the Sanitary District has made repeated applications for permission to increase the flow, which requests have [fol. 433] consistently been denied by the Secretary of War on the grounds that the permit already issued is of a temporary nature only and that congressional authority is necessary for any permanent diversion. In 1907 the Board of Trustees made application for authority to construct the Calumet-Sag Channel to connect the Calumet River with the main Drainage Canal, and to draw through it 4,000 second feet in addition to the 4,167 second feet previously authorized for the Chicago River. This application was denied, and the Board of Trustees thereupon declared its intention of proceeding with the proposed work and withdrawing from Lake Michigan the additional 4,000 second feet without the sanction of the Secretary of War, unless prevented by injunction proceedings.

3. A suit was then instituted in March, 1908, by the Attorney General of the United States to restrain the Sanitary District from reversing the flow of the Calumet River and from withdrawing water from Lake Michigan in any other manner and in any greater quantity than that authorized by the Secretary of War.

4. Being thus stopped by court action from proceedings with its Calumet program, the Board of Trustees in 1910 applied for authority [fol. 434] to construct the Calumet-Sag Channel so as to carry the present flow through the two drainage canals instead of only one. In response to this application the Department on June 30, 1910, modified the existing authority so as to allow the previously authorized flow of 4,167 second feet to reach the main Drainage Canal through the Calumet-Sag Channel as well as through the Chicago River, provided, however, that the total amount withdrawn through

the two outlets should not exceed the 4,167 second feet already authorized to be withdrawn through the Chicago River alone.

5. However, the Board of Trustees was not satisfied with this limitation, and in 1912 made application for authority to withdraw through the two rivers, the Chicago and Calumet, a total of 10,000 second feet. After a public hearing this application was denied by the Secretary of War on January 8, 1913. As the Board refused to accept this decision, the attorney General filed another bill in October, 1915. This suit was combined with the one filed in 1908, but on account of the war and other reasons no decision was rendered by the court until June 19, 1920. On that date Judge Landis rendered an "oral opinion" in which he held that the 8,500 second [fol. 435] feet, more or less, which the Sanitary District was now diverting from Lake Michigan, had resulted in a lowering of the lake levels, and an impairment of the navigable capacity of all of the great lakes except Lake Superior; and that said diversion was not necessary "for the salvation of this community." He directed the attorneys for the two sides to get together and prepare for his signature an order sustaining the contentions of the plaintiff, to be effective 60 days after the meeting of the Supreme Court in October.

6. Instead of that, Judge Landis, in August, 1920, in the presence of the District Attorney and myself, heard the Sanitary District Attorney, Mr. Adcock, argue that the Judge should modify his oral opinion so as to allow a total flow of 10,000 second feet. As the arguments were not finished that day the hearing was adjourned to be concluded at his summer home at Trout Lake, Mich., on some day which was to be arranged later. On account of the sickness of the Judge's brother the adjourned meeting, which had been set for the latter part of August, was again postponed and has not been taken up since.

7. Ignoring all questions except that of the proper reduction and [fol. 436] disposal of Chicago sewage, by the existing method, it is apparent, from many considerations that an excessive amount of water from Lake Michigan is not being used. Contamination of the Illinois River is proceeding rapidly down stream toward Peoria; parts of the Chicago River and its branches show a state of contamination which is all too apparent to the eye and to the nose. It is easy to believe that if, under present conditions of sewage disposal, the amount of water from Lake Michigan is suddenly curtailed, the health of Chicago might be threatened. It is apparent therefore, that if the amount of water diverted from Lake Michigan is not to increase proportionately with the increase of population in Chicago and if health conditions in Chicago are to remain normal, there must be treatment of Chicago sewage. In 1919, with these facts in mind I took up with the Trustees of the Sanitary District the question of adopting an effective program for sewage disposal. As a result, a program was adopted on August 7, 1919, which contemplated that during the following four years there should be accomplished such work of land acquisition, planning, financing and actual con-

struction as would result in a continuous reduction thereafter of the raw sewage entering the drainage canal. The program further provided that by the expiration of twenty-five years from the date of the program the work of purification shall have been so far advanced that the amount of raw sewage entering the Drainage Canal shall equal not more than one-half of that entering now, and this reduction must occur notwithstanding the fact that at the expiration of twenty-five years the amount of raw sewage produced in the district may be almost double that now originating there. Thus by the end of the twenty-five years period the Sanitary District might be required to treat some 50% more raw sewage than that now enters the Drainage Canal. The cost of carrying out this program was roughly estimated at \$140,000,000.

8. The Sanitary District has had studies made by Mr. Francis C. Shenehon, a competent hydraulic engineer, for regulating and compensating works in the Niagara River and at the Galops Rapids in the St. Lawrence below the lower end of Lake Ontario. Mr. Shenehon has prepared preliminary plans and estimates for the works above mentioned. He estimates that regulating works in the Niagara River would cost approximately \$1,224,000, and those at the Galops Rapids approximately \$1,000,000. It is understood that the Sanitary District, if the engineering propositions of Mr. Shenehon are approved by the United States, proposes to turn over to the latter the amount required for the construction of the works above described, the maintenance and operation of the same to be at the expense of the United States. These works, it may be said, contemplate a diversion of 10,000 cubic feet per second from Lake Michigan to the Drainage Canal. Digests of these two projects as prepared for me by Mr. Shenehon at my request are as follows:

Digest of Niagara Regulation Project

The Niagara River Regulation contemplates slack-water, vessel-draft betterments in Lake Erie, the Detroit River, Lake St. Clair and St. Clair River, Lakes Michigan and Huron and St. Mary's River to the locks at Sault Ste Marie.

The loss of draft due to a diversion of 10,000 second feet at Chicago is about 5½ inches. In a low water period such as the ten years 1893-1902, the regulation proposed will add over 14 inches to the depth of Lake Erie and Lower Detroit River; over 10 inches to Lake St. Clair, the Upper Detroit River and the Lower St. Clair [fol. 439] River, with proportionate increase in St. Marys River. In a decade of more plentiful supply, the average betterment is less, because no increase in Lake stage is practicable at flood height. The regulation will compensate for lowerings due to all anticipated diversions at Chicago, in the Welland and Erie Canals and in the Niagara River for power purposes, and the regulation is accomplished without danger of riparian damage from flood stages.

The excess flow of May to August inclusive is saved to hold up Lake Erie level during the season of navigation. The Niagara River

runs free from January to March inclusive, to avoid flood stages, to give unimpeded passage for ice and to add water for power purposes during the season of ice complications. Water power is the beneficiary of the larger winter flow, which averages 17,000 second feet in January and February, more than off-setting a diversion of 10,000 second feet at Chicago.

During the summer season about 30,000 second feet in addition to the controlled flow would be released during part of each day to furnish mill-pond water for power uses, so that the full natural river flow may pass over the cataracts to preserve scenic grandeur. Regulation of the Niagara has been delayed by the fear of the people of Buffalo that regulating works would cause ice jams and hold up the vast ice fields which cover the east end of Lake Erie. This objection is met by placing removable vessel-type gates, which are removed in January and replaced in May.

The site chosen for works is at the head of the Niagara River, opposite the old water-works at Buffalo. The River is 1,800 feet wide here with bed limestone bottom. The river channel is divided into two sluice-ways by a submerged concrete wall, three-quarters of a mile long and parallel with the current. This carries a shutter dam to complete the partition and the shutters knock down during the winter. Four gates, each equipped with twelve large butterfly valves, close off the American Sluiceway. These gates rest and swing on massive concrete emplacements rising about two feet above the rock bottom. Special devices make the placing and removing of these gates easy. As each inch of added draft in Lake Erie is estimated as having a yearly value, of half a million dollars, the average increase of 13 inches is significant. The far reaching benefit [fol. 441] fits, from Buffalo to Sault Ste. Marie, without works or wiers in the Detroit or St. Clair Rivers, point this out as a project of great concern. The Niagara and St. Lawrence regulations work hand-in-hand.

Digest of St. Lawrence Regulation Project

The St. Lawrence River Regulation contemplates higher surface levels for Lake Ontario in years when the lake is naturally low, and the avoidance of high stages which might cause riparian damage. This depends on the simple principles of slack-water betterment, utilizing movable regulating gates, which when open leave the full out-flow capacity of the lake undiminished as a safeguard against flood conditions. The aim of the project is not alone to restore the loss of navigable depth due to a diversion of 10,000 second feet at Chicago (5½ inches), but to maintain the lake at the highest practicable safe stage. By the manipulation of the outflow computations show 19½ inches gain for the record low water year 1895; over 21 inches gain for the ten-year period 1893-1902; and over 12 inches betterment for the normal supply period 1907-1916. [fol. 442] The lower limit of slack-water betterment is at the Galops Rapids below Ogdensburg, New York, Navigation betterment below

these rapids is secured by impounding in Lake Ontario the excess supply of the flood months March, April, May and June, and holding this reservoir water for release in the fall months August to November, inclusive. It is found that, while Chicago takes away 10,000 second feet, this is replaced by 9,000 second feet of impounded water in September, 16,000 second feet in October and 20,000 second feet in November. The lower St. Lawrence is dependent for good volume of flow on Lake Ontario water only in these fall months. The Ottawa River entering the St. Lawrence at Montreal has a May flow of 150,000 second feet dwindling to perhaps 20,000 second feet in September, October and November.

Budgeting Lake Ontario water aids water-power by greater uniformity of flow. The attenuated January-February flow is diminished by 10,000 second feet for Chicago, and 17,000 second feet of impounded water more than restores the loss.

The two channels of the Galops Rapids are natural Sluiceways controlling the outflow of Lake Ontario. The Canadian Channel will remain unobstructed. The non-navigable American Channel, [fol. 443] carrying 43 per cent of the outflow, will be throttled by 1,020 feet in length of regulating works. The bottom is bed limestone, probably overlain in part of glacial drift. The works are placed at the head of this channel. The gates consist of wickets, dropped from five 200-foot span steel bridge platforms. Some increase in outflow capacity of the American Channel is recommended.

9. The special Board of Waterway from Lockport, Ill., to the Mouth of the Illinois River, etc., reported that it would require \$150,000 to build works in the Niagara River, and \$325,000 for works in the St. Clair River to compensate in Lakes Michigan, Huron and Erie for a lowering of their levels due to the diversion of 10,000 second feet, with \$15,000 annually for maintenance.

10. The Sanitary Trustees are very anxious to have a determination at this time of the amount of water the United States will permit to be diverted from the Lake. It seems to be admitted now by all concerned that this matter should be settled by Act of Congress. For example, see page 6, House Doc. 762, 63d Cong., 2d Session, from which the following is quoted:

"Further the Board believes that the total volume of water to be [fol. 444] diverted from the natural discharge channels of the Lakes should be definitely fixed by Congress; that a project with estimate of cost for works necessary to compensate for such diversion should be prepared to the satisfaction of the Chief of Engineers and the Secretary of War; that before any diversion is made beyond that at present existing, the State of Illinois, shall transfer to the Secretary of War the funds necessary for such works as given by the approved estimate of cost; that the works shall be built by the United States with the funds so provided; and that the control and maintenance of such works shall be in and at the cost of the United States."

11. The circumstances that the State of Illinois is now engaged in constructing a navigable link between the Sanitary District Canal

and the Illinois River at Utica makes it extremely desirable that an early determination be made of the amount of flow to be authorized permanently from Lake Michigan. Upon the amount of flow so authorized [fol. 445] will depend to a large extent the character of the improvements which will be necessary to provide an 8 foot channel in the Illinois River should that depth be authorized by Congress.

12. In the letter from the Chief of Engineers dated March 25, 1920 (E. D. 28918) hereinbefore referred to, I was informed that "at a conference with representatives of the Chicago Sewage Disposal Commission and the Sanitary District Trustee" (sic), it was agreed that the Trustees of the Drainage Canal and the Sanitary Officers of the State would make a study to ascertain what could be accomplished in regard to sewage purification before the sewage was allowed to enter the Drainage Canal or the Illinois River, and the results of such study communicated to the Chief of Engineers through the District Engineer at Chicago. In this same letter I was instructed to cooperate with the Trustees in their study of the case and to render such assistance as I was able, the study to be made "with the idea of withdrawing the least amount of water from Lake Michigan which would be necessary for the purpose."

13. In accordance with the instructions of the Chief of Engineers [fol. 446] as contained in his letter of March 25, 1920 above referred to, I have held numerous conferences with the Officials of the Sanitary District with regard to their plans for sewage treatment. During the past year there has been considerable change in the official personnel of the Sanitary District, especially among those actively engaged in formulating plans for their sewage treatment system. Among those are the President Chief Engineer, General Counsel and a number of Trustees, considering these conditions the progress made has been very satisfactory.

14. In regard to the contention of the Sanitary District that it is necessary to divert more than 4,167 cubic feet per second in order to avoid contamination of the City water supply and consequent epidemics, I was empowered in a memorandum of the Secretary of War for the Chief Engineers dated July 21, 1920 to say "that if Judge Landis' decree is accepted as final, the War Department will issue no permit, since it is without legal power to do so, but will ask no further orders from the Court to enforce the limitation so long as the City of Chicago proceeds with dispatch to prepare plans and put them into process of execution for its sewage system. If the City of Chicago then prepares plans and consents to the War Department having current knowledge of its activity, either by reports to the courts or otherwise, the situation will be under the control of Judge Landis until the whole problem is disposed of. If however, the City of Chicago proposes to appeal the case and taken no steps pending the appeal to cure the trouble, Colonel Judson should be instructed to make no concessions or promises of any kind." This memorandum of the Secretary of War was obtained through the Chief of Engineers at my solicitation for use whenever Judge Landis decides to finish the hearing on Attorney Adcock's arguments for

allowing a total diversion of 10,000 second feet. In this connection Mr. Odcock was making the argument that the War Department would be arbitrary in acting on the findings of the court, and a statement was desired which would show that the Secretary of War would not be arbitrary in the matter.

15. On January 17, 1921, a formal conference was held between Mr. Chas. F. Clyne, United States Attorney, and myself representing the United States and the Trustees of the Sanitary District, their attorneys, Consulting Engineer and Chief Engineer. At this conference attention was invited to the Memorandum of the Secretary [fol. 448] of War for the Chief of Engineers dated July 21, 1920, above referred to, copies of which were furnished the Attorneys for the Sanitary District. The Trustees agreed to take under advisement the proposition of the Secretary of War as set forth in his memorandum and to submit an answer thereto at a later date. At this conference an agreement was reached with the Sanitary District authorities that I be furnished with an outline of their present plans for sewage treatment. A copy of the memorandum furnished in accordance with the above agreement giving an outline of the work already completed, that now under way and proposed, and indicating the probable future policy of the Trustees, is enclosed herewith.

16. A second conference was held on February 7, 1921, at which the United States Attorney was represented by his assistant Mr. J. B. Boddie. The proposal of the Secretary of War as embraced in the last paragraph of his memorandum of July 21, 1920 (E. D. 98093/657), was discussed and the Sanitary Trustees stated that they were unable to accept the proposition that Judge Landis' decree be accepted as final. On the other hand they stated that they would proceed diligently in the preparation and execution of plans for the treatment of sewage within the Sanitary District. They stated that since the conference of January 17, 1921, they had prepared their budget and in it had placed some \$8,000,000 for sewage treatment operations, and that in subsequent budgets they would continue to provide for work upon a large scale to carry into effect plans already prepared or now being prepared for sewage treatment. They estimated that depending upon conditions in the labor and material market the entire cost of such treatment would be in excess of \$100,000,000 and perhaps as much as \$140,000,000 but stated that they were confident that they could provide this sum so that in somewhat less than 25 years they would be able to at least carry out the program adopted August 7, 1919, and perhaps do even better than was proposed in that program.

17. It was understood that the matter before Judge Landis would be proceeded with regardless of the more or less futile negotiations that have been in progress with reference to the proposition of the Secretary of War that the decree of Judge Landis be accepted as final. Mr. Boddie stated that he understood the situation and understood it to be the duty of the United States Attorney's office to proceed with [fol. 450] efforts on its part to secure the formulation and entering

of the formal decree by Judge Landis, opposing any efforts of the Sanitary District to procure a modification of the decree. It may of course be regarded as a fact that the Sanitary Trustees will appeal from the decree of Judge Landis if it is entered without modification, satisfactory to them.

18. The Chief Engineer of the Sanitary District, at the conference of February 7, 1921, informed me that it was the intention of a committee of Trustees and employes of the Sanitary District, including himself, to visit Fort Worth and Houston, Texas, and other localities, at an early date, to inspect activated sludge plants in course of construction or operation and suggested that I accompany them. This I subsequently undertook to do but my travels were interrupted by illness.

19. While the Sanitary District doubtless has authority under existing state laws to proceed with its sewage treatment program, in an excess of caution it has caused bills to be introduced in the State Legislature for explicit authority to construct the proposed sewage treatment works, in accordance with the accompanying memorandum, and the controlling works in the Niagara and St. Lawrence [fol. 451] Rivers as well, in accordance with the projects of Mr. Francis C. Shenehon, hereinbefore referred to. These bills are still pending with good prospects that they will be passed.

Opposing interests are also endeavoring to secure legislation to limit the bonding power of the Sanitary District, by requiring that each bond issue be subject to a referendum.

20. In the meantime the Sanitary Trustees are proceeding energetically with their plans for sewage treatment and disposal as outlined in enclosed memorandum. Since the date of their report they have acquired 180 acres of land located on the North Shore Channel as a site for their proposed North Side purification plant.

21. The progress made by the Sanitary District is well illustrated by Exhibits E and F constituting part of enclosure showing their budget appropriation for 1921 and their expenditures during the ten year period 1910-1920. During the last named period the expenditure for sewage treatment works has amounted to approximately \$9,400,000. Their budget for 1921 provides \$6,500,800 for the completion of old projects and \$3,242,500 for new projects.

22. The program of the Sanitary District, if carried out, will [fol. 452] insure the practicability of keeping the volume of water diverted from Lake Michigan within limits which it is hoped all concerned will finally deem reasonable.

W. V. Judson, Colonel, Corps of Engineers, Divn. Engr.,
N. W. Divn. 1 encl.

[fol. 453]

PEARSE EXHIBIT 4—Apr. 25/23

The Sanitary District of Chicago

Population and Area

Year	Population	Area	Date of census
1890.....	1,149,758	185.0	June 1
1900.....	1,775,832	185.0	June 1
1910.....	2,311,810	358.1	Apr. 15
1919.....	2,940,906*	388.14*	.....
1920.....	2,986,000	395.51	Jan. 1
1921.....	3,071,000	.....	.....
1922.....	3,142,000	437.39	.....

[fol. 454]

PEARSE EXHIBIT 5—Apr. 25/23

The Sanitary District of Chicago

Population in Various Sewerage Districts

Locations	1920	1930	1940	1950	1960
North Side Treatment Plant	590,000	800,000	1,615,000	1,230,000	1,450,000
West Middle Plant Incl. Loop	1,300,000	1,420,000	1,550,000	1,680,000	1,800,000
S. W. Treatment.....	850,000	1,040,000	1,230,000	1,415,000	1,600,000
Calumet	160,000	225,000	290,000	350,000	415,000
Miscellaneous	100,000	215,000	340,000	465,000	595,000
S. D. C. Total.....	3,000,000	3,710,000	4,425,000	5,140,000	5,860,000

Dec. 31, 1921.

[fol. 455]

PEARSE EXHIBIT 6—Apr. 25/23

The Sanitary District of Chicago

Population Estimates

Year	Human	Industrial equivalent	Total
1920.....	3,000,000†	1,500,000	4,500,000
1930.....	3,710,000	1,700,000	5,410,000
1940.....	4,425,000	1,900,000	6,325,000
1945.....	4,782,000	2,000,000	6,782,000
1950.....	5,140,000	2,100,000	7,240,000
1955.....	5,500,000	2,200,000	7,700,000
1960.....	5,860,000	2,300,000	8,160,000

*In June, prior to annexation of Salt Creek Villages.

†Based on 1920 Census.

[fol. 456]

PEARSE EXHIBIT 7—Apr. 25/23

Year	Population	Mill. gal. per 24 hr.	Gal. per cap. per 24 hr.	Max. rate mil. gal. per 24 hr.
1920.....	2,700,190	715	265	945
1945.....	3,919,275	1,355	346	1,800
1955.....	4,406,909	1,610	365	2,130

[fol. 457]

PEARSE EXHIBIT 1—Apr. 26/23

The Sanitary District of Chicago

Estimated Costs of Sewage Treatment Projects and Necessary
Construction Work for Period 1922-1945

Work under contract and completed project	Contract liability	Date of completion
Calumet Treatment Plant.....	\$2,200,000	1922
“ Mach. & Adm. Bldg.....	520,000	1923
“ Sewers—Contract #10.....	130,000	1922
“ “ “ #11.....	2,300,000	1923
Desplaines Treatment Plant.....	300,000	1922
Oak Park Sewer.....	500,000	1922
39th St. Conduit Extension.....	2,000,000	1924
Calumet Sag Channel.....	200,000	1922
North Side Sewers—Contract #1.....	1,610,000	1923

Proposed work	Estimated cost	
Calumet Sewers—Contract #1.....	400,000	1923
Harbor Ave. Sewer.....	250,000	1924
Extension Blue Island Sewer.....	425,000	1928
Sewer to Riverdale & Dolton.....	200,000	1928
Sewer—Burnham, Hegewisch & W. Ham- mond	500,000	1928
95th St. Pumping Station.....	1,000,000	1924
Calumet Sag Channel.....	120,000	1923
Dredging Calumet River.....	1,000,000	1929
Glenview Treatment Plant.....	25,000	1922
La Grange Sewer & Treatment Plant....	75,000	1923
Oak Forest Sewer.....	300,000	1923
Extension Desplaines Plant.....	100,000	1924
California Ave. Bridge.....	750,000	1924
Elmwood Park Sewer.....	250,000	1925
Stockyards Treat. Plant (Demonstration).	350,000	1926
“ Sewers, Pump. Sta. & Screens.	1,000,000	1926
Cicero Ave. Bridge.....	1,500,000	1926
Remodel Lawrence Ave. Pump. Sta.....	200,000	1926
Broadview Sewers.....	200,000	1926
Corn Products Treatment Plant.....	1,500,000	1927

Proposed work	Estimated cost	
Regulation Works—Niagara & St. Lawrence	2,500,000	1927
North Side Treatment Plant.....	13,500,000	1928
“ “ Sewers (exc. Cont. #1).....	7,800,000	1928
Crawford Ave. Bridge.....	1,500,000	1928
Harlem Ave. Bridge.....	1,000,000	1929
Calumet Sp. Filters & Plant.....	2,000,000	1930
Extension Northside Plant.....	2,000,000	1931
Stockyards Treatment Plant.....	6,000,000	1932
Remodeling 39th St. & 73rd St. Pumping Sta.	900,000	1934
West Side Sewers.....	13,300,000	1940
“ “ Treat. Plant (Imhoff).....	10,900,000	1940
South West Side Sewers.....	9,400,000	1945
“ “ “ Treat. Plant (Imhoff) ..	7,200,000	1945
*Misc. Treat. Plants & Sewers.....	11,200,000	1927-1945

[fol. 458]

PEARSE EXHIBIT 2—Apr. 26/23

Expenditures for Sewage Treatment Since 1909 for Construction Purposes

Year	Total
1910	\$157,816
1 .....	.....
2	55,269
3	19,683
4	490,468
5	280,348
6	700,648
7	1,533,260
8	1,543,227
9	1,803,064
1920	2,835,387
1	5,052,511
2	6,691,982
	<hr/>
	\$21,163,663

*To cover miscellaneous work which it is impossible to foresee and sewers for upper Desplaines River towns.

[fol. 459]

PEARSE EXHIBIT 3—Apr. 26/23

The Sanitary District of Chicago

Expenditures for Sites for Sewage Treatment Works Up to 1921

Treatment plant	Amount paid for site	When acquired
Calumet Pumping Station.....	\$12,423.40	May 27, 1915
Calumet Treatment Plant.....	159,636.00	Feb. 13, 1920
Desplaines Treatment Plant.....	25,194.00	Oct. 4, 1917
52nd Ave. Treatment Plant.....	39,505.88	Mar. 31, 1913
Evanston Pumping Station.....	11,341.60	April 20, 1916
North Side Treatment.....	269,995.00	April 21, 1921

(Here follow Pearse Exhibit 4 and Christie Exhibit 1, marked side folio pages 460 and 461.)

[fol. 462]

CHRISTIE EX. 2—Apr. 26/23

TABLE I

Table Showing Movement of Iron Ore During 1920

Compiled from Part 2 of Chief of Engineers, U. S. Army Report, for
Fiscal Year Ended June 30th, 1921

Page	Harbors	Shipment—Tons
1001	Duluth, Minn.....	33,771,582
1008	Ashland, Wis.....	9,162,554
998	Agate Bay, Minn.....	10,391,879
1017}	Marquette, Mich.....	3,824,921
1018}		
1030	Escanaba, Mich.....	7,361,069
		<hr/> 64,512,005 Tons

[fol. 460]

W. 39th St. Conduit & Western Ave. Sewer.....	
52nd Ave. Sewer & Outlet.....	
52nd Ave. & W. 39th St. Sewer.....	
North Shore Interceptor, Contract 1.....	
North Shore Interceptor, Contract 2.....	
North Shore Interceptor, Contract 3.....	
Morton Grove Settling Plant.....	
Calumet Intercepting Sewer, Contract 2.....	
Calumet Intercepting Sewer, Contract 3.....	
Stockyards Intercepting Sewer.....	
Niles Center Sewer.....	
Evanston Intercepting Sewer.....	
Calumet Intercepting Sewer, Contract 4.....	
Calumet Intercepting Sewer, Contract 5.....	
Calumet Intercepting Sewer, Contract 6.....	
Calumet Intercepting Sewer, Contract 7.....	
Des Plaines River Intercepting Sewer.....	
Calumet Pumping Station.....	
Evanston Pumping Station.....	
Des Plaines Treatment Plant (All Divisions).....	
Morton Grove Sprinkling Filter.....	
W. 39th St. Extension (Division A).....	
Calumet Power Plant.....	
Calumet Treatment Works (Division A).....	
Calumet Treatment Works (Division B).....	
Calumet Treatment Works (Div. C. D. E. F. G & H).....	
Calumet Intercepting Sewer, Contract 8.....	
Calumet Intercepting Sewer, Contract 9.....	
Calumet Intercepting Sewer, Contract 10.....	
Calumet Intercepting Sewer, Contract 11.....	
Oak Park Outfall.....	
W. 39th St. Extension (Division B).....	
North Side Intercepting Sewer, Contract 1.....	

Total

*Credit from Union Stockyards and Transit Co.

PEARSE EXHIBIT 4—Apr. 28/23

The Sanitary District of Chicago

Expenditures for Construction of Sewage Treatment Works, 1910-1922

1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	Total
157,816	55,269	3,807	.....	.....	4,918	.....	.....	.....	.....	.....	.....	157,816
.....	15,870	140,771	28,155	.....	.....	16,360	.....	.....	.....	.....	63,994
.....	197,710	52,113	30,409	.....	.....	.....	.....	.....	.....	201,162
.....	86,383	14	.....	.....	.....	.....	.....	.....	.....	280,232
.....	57,108	168,529	35,290	.....	.....	.....	.....	.....	.....	86,397
.....	8,498	651	.....	.....	.....	.....	.....	.....	.....	260,925
.....	94,911	88,272	1,505	.....	.....	.....	.....	9,149
.....	30,887	290,327	4,943	.....	.....	.....	.....	.....	184,688
.....	96,587	*10,799	*673	.....	.....	.....	.....	326,157
.....	1,442	22,695	299	.....	.....	.....	.....	85,115
.....	7,571	479,901	467,731	119,570	262,982	14,016	.....	24,436
.....	57,442	300,868	258,034	28,683	116,272	.....	.....	1,351,771
.....	2,300	48,190	628,811	20,273	.....	761,299
.....	95,764	198,737	226,833	65,141	231,302	.....	.....	699,574
.....	25,987	448,649	446,681	.....	126,058	.....	.....	817,777
.....	13,179	480,172	85,808	.....	4,071	1,047,375
.....	110,978	636,847	560,790	55,021	369	583,230
.....	242,392	85,415	112,114	.....	1,364,005
.....	155,654	212,377	272,745	352,609	439,921
.....	26,415	12,465	.....	.....	993,385
.....	173,915	277,155	.....	38,880
.....	249,737	729,922	145,864	451,070
.....	7,197	1,547	.....	1,125,523
.....	59,158	550,594	5,000	8,744
.....	23,100	2,510,095	2,945,332	614,752
.....	163,237	5,885	5,478,527
.....	94,207	72,646	169,122
.....	145,548	166,853
.....	521,883	145,548
.....	251,585	535,484	521,883
.....	97,696	787,069
.....	1,902,700	97,696
.....	1,902,700
157,816	55,269	19,683	490,468	280,349	740,648	1,533,266	1,543,227	1,803,064	2,835,387	5,052,511	6,735,087	21,246,775

April 19, 1923.

CHRISTIE Ex. 1—Apr. 26/23

The Sanitary District of Chicago

Composite Statement Estimating Resources and Liabilities under 1940 Construction Program

Year	Population	Receipts						Expenditures						Net revenue available for new construction	Construction program
		Assessed valuation		Tax rate per \$100 valuation	Tax receipts levy less 10% a/c costs and delinquencies	Bond issues	Total	Outstanding bonds		Future bond issues		Administration & maintenance & operation	Total		
		Total	Per capita					Redemption	Interest	Redemption	Interest				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1921	3,071,000	\$1,824,157,564	\$594	\$0.36		*\$3,750,000									
1922	3,142,	1,870,	595	.40	\$5,900,000	2,000,000	\$11,650,000	\$1,551,000	\$944,440			\$2,100,000	\$4,595,440	\$7,054,560	\$8,400,000
1923	3,213,	1,915,	596	.40	6,650,000	6,000,	12,650,	2,146,	1,129,340	\$1,000,000	\$90,000	2,400,	5,865,340	6,784,660	7,000,
1924	3,284,	1,965,	598	.40	6,900,000	6,000,	12,900,	1,980,	1,035,960	400,	355,500	2,500,	6,271,460	6,628,540	7,000,
1925	3,355,	2,015,	600	.40	7,100,	7,000,	14,100,	1,880,	949,060	700,	607,500	2,600,	6,736,560	7,363,440	7,000,
1926	3,426,	2,065,	603	.40	7,250,	7,000,	14,250,	1,824,	866,160	1,050,	891,000	2,700,	7,331,160	6,918,840	7,000,
1927	3,497,	2,115,	605	.40	7,450,	8,000,	15,450,	2,124,	785,500	1,400,	1,158,750	2,800,	8,268,250	7,181,750	6,600,
1928	3,568,	2,170,	608	.40	7,600,	7,000,	14,600,	2,076,	685,340	1,800,	1,455,750	2,900,	8,917,090	5,682,910	6,100,
1929	3,639,	2,225,	611	.40	7,800,	9,000,	16,800,	2,076,	587,100	2,150,	1,689,750	3,900,	10,402,850	6,397,150	6,000,
1930	3,710,	2,280,	615	.40	8,000,	9,000,	17,000,	1,951,	488,860	2,600,	1,998,000	4,500,	11,537,860	5,462,140	5,500,
1931	3,782,	2,345,	620	.40	8,200,	8,000,	16,200,	1,373,	395,620	3,050,	2,286,000	4,500,	11,604,620	4,595,380	5,200,
1932	3,854,	2,400,	623	.40	8,450,	8,000,	16,450,	1,270,	330,500	3,450,	2,506,750	4,500,	12,057,250	4,392,750	4,200,
1933	3,926,	2,460,	627	.40	8,650,	8,000,	16,650,	770,	269,500	3,850,	2,713,500	4,500,	12,103,000	4,547,000	4,200,
1934	3,998,	2,520,	630	.40	8,850,	8,000,	16,850,	770,	233,500	4,250,	2,900,250	4,500,	12,653,750	4,196,250	4,200,
1935	4,070,	2,580,	634	.40	9,050,	8,000,	17,050,	770,	197,500	4,650,	3,069,000	4,500,	13,186,500	3,863,500	4,200,
1936	4,142,	2,645,	639	.40	9,300,	9,000,	18,300,	670,	161,500	5,050,	3,219,750	4,500,	13,601,250	4,698,750	4,200,
1937	4,214,	2,710,	643	.40	9,500,	9,000,	18,500,	670,	129,500	5,500,	3,397,500	4,500,	14,197,000	4,303,000	4,200,
1938	4,282,	2,780,	650	.40	9,750,	9,000,	18,750,	520,	97,500	5,950,	3,355,000	4,500,	14,622,500	4,127,500	4,200,
1939	4,354,	2,850,	654	.40	10,000,	9,000,	19,000,	520,	71,500	6,400,	3,692,250	4,500,	15,183,750	3,816,250	4,200,
1940	4,425,000	2,120,000,000	660	.40	10,250,000	11,000,000	21,250,000	520,000	45,500	6,850,000	3,809,250	6,000,000	17,224,750	4,025,250	4,200,000
1941															
Totals					\$156,650,000	\$151,750,000	\$308,400,000	\$25,461,000	\$9,403,880	\$59,200,000	\$39,395,500	\$72,900,000	\$206,360,380	\$102,039,620	\$101,600,000

*\$3,750,000 cash available February, 1922.

Compiled by H. M. Christie and H. P. Ramey.

CHRISTIE Ex. 1--Apr. 26/23

The Sanitary District of Chicago

Composite Statement Estimating Resources and Liabilities under 1940 Construction Program

Assessed valuation		Receipts				Expenditures						Net revenue available for new construction	Construction program	Year	Bonds out- standing Jan. 2	Bonding capacity maximum
Total	Per capita	Tax rate per \$100 valuation	Tax receipts levy less 10% a/c costs and delinquencies	Bond issues	Total	Outstanding bonds		Future bond issues		Adminis- tration & maintenance & operation	Total					
(3)	(4)	(5)	(6)	(7)	(8)	Redemption	Interest	Redemption	Interest	(13)	(14)	(15)	(16)	(17)	(18)	(19)
\$1,824,157,564	\$594	\$0.36		*\$3,750,000										1921		\$54,723,000
1,870,	595	.40	\$5,900,000	2,000,000	\$11,650,000	\$1,551,000	\$944,440			\$2,100,000	\$4,595,440	\$7,054,560	\$6,400,000	1922	\$25,851,000	56,100,
1,915,	596	.40	6,650,000	6,000,	12,650,	2,146,	1,129,340	\$1,000,000	\$90,000	2,400,	5,865,340	6,784,660	7,000,	1923	26,300,	57,450,
1,965,	598	.40	6,900,000	6,000,	12,900,	1,980,	1,035,960	400,	355,500	2,500,	6,271,460	6,628,540	7,000,	1924	30,054,	58,950,
2,015,	600	.40	7,100,	7,000,	14,100,	1,880,	949,060	700,	607,500	2,600,	6,736,560	7,363,440	7,000,	1925	33,674,	60,450,
2,065,	603	.40	7,250,	7,000,	14,250,	1,824,	866,160	1,050,	891,000	2,700,	7,331,160	6,918,840	7,000,	1926	38,094,	61,950,
2,115,	605	.40	7,450,	8,000,	15,450,	2,124,	785,500	1,400,	1,158,750	2,800,	8,268,250	7,181,750	6,600,	1927	42,220,	63,450,
2,170,	608	.40	7,600,	7,000,	14,600,	2,076,	685,340	1,800,	1,455,750	2,900,	8,917,090	5,682,910	6,100,	1928	46,696,	65,100,
2,225,	611	.40	7,800,	9,000,	16,800,	2,076,	587,100	2,150,	1,689,750	3,900,	10,402,850	6,397,150	6,000,	1929	49,820,	66,750,
2,280,	615	.40	8,000,	9,000,	17,000,	1,951,	488,860	2,600,	1,998,000	4,500,	11,537,860	5,462,140	5,500,	1930	54,594,	68,400,
2,345,	620	.40	8,200,	8,000,	16,200,	1,373,	395,620	3,050,	2,286,000	4,500,	11,604,620	4,595,380	5,200,	1931	59,043,	70,350,
2,400,	623	.40	8,450,	8,000,	16,450,	1,270,	330,500	3,450,	2,506,750	4,500,	12,057,250	4,392,750	4,200,	1932	62,620,	72,000,
2,460,	627	.40	8,650,	8,000,	16,650,	770,	269,500	3,850,	2,713,500	4,500,	12,103,000	4,547,000	4,200,	1933	65,900,	73,800,
2,520,	630	.40	8,850,	8,000,	16,850,	770,	233,500	4,250,	2,900,250	4,500,	12,653,750	4,196,250	4,200,	1934	69,280,	75,600,
2,580,	634	.40	9,050,	8,000,	17,050,	770,	197,500	4,650,	3,069,000	4,500,	13,186,500	3,863,500	4,200,	1935	72,260,	77,400,
2,645,	639	.40	9,300,	9,000,	18,300,	670,	161,500	5,050,	3,219,750	4,500,	13,601,250	4,698,750	4,200,	1936	74,840,	79,350,
2,710,	643	.40	9,500,	9,000,	18,500,	670,	129,500	5,500,	3,397,500	4,500,	14,197,000	4,303,000	4,200,	1937	78,120,	81,300,
2,780,	650	.40	9,750,	9,000,	18,750,	520,	97,500	5,950,	3,355,000	4,500,	14,622,500	4,127,500	4,200,	1938	80,950,	83,400,
2,850,	654	.40	10,000,	9,000,	19,000,	520,	71,500	6,400,	3,692,250	4,500,	15,183,750	3,816,250	4,200,	1939	83,480,	85,500,
2,120,000,000	660	.40	10,250,000	11,000,000	21,250,000	520,000	45,500	6,850,000	3,809,250	6,000,000	17,224,750	4,025,250	4,200,000	1940	85,560,000	87,600,000
.....
.....	....	....	\$156,650,000	\$151,750,000	\$308,400,000	\$25,461,000	\$9,403,880	\$59,200,000	\$39,395,500	\$72,900,000	\$206,360,380	\$102,039,620	\$101,600,000	....	.....	.....

Page	Harbors	Receipts-Tons	
1054	Milwaukee, Wis.....	144,500	
1096	Calumet, Wis.....	7,275,558	
1098	Indiana Harbor, Ind.....	1,426,983	
1142	Rouge River, Mich.....	910,987	
1143	Toledo, Ohio.....	2,982,102	
1151	Huron, Ohio.....	1,534,615	
1153	Lorain, Ohio.....	4,508,600	
1155	Cleveland, ".....	8,957,165	
1158	Fairport, ".....	1,397,719	
1159	Ashtabula, ".....	12,351,940	
1161	Conneaut, ".....	6,708,534	
1164	Erie, Pa.....	2,484,897	
1170	Buffalo, N. Y.....	8,577,923	
1174	Tonowanda, N. Y.....	602,695	
	Miscellaneous.....	3,368,048	
	Foreign Ports.....	1,279,739	
		<hr/>	64,512,005 Tons

Memoranda

	Lake Superior Shipments.....	57,150,936 Tons
1104	Passed 500—eastbound.....	56,780,498 "

Comparison of Depths in Certain Channels and Harbors at Sundry Elevations of the Waters of Lakes Michigan, Huron, Erie, and Superior, Compiled from Bulletin No. 31, "Survey of Northern and Northwestern Lakes," Issued by U. S. Lake Survey Office, Detroit, Mich., April, 1922, and Water Level Records Furnished by Same Authority.

Table II

Page of bulletin	Channels	Project	Actual		Depths at		Depths		Depths for lowest month for 1911 navi- gation sea- son, lowest monthly mean
		depths assum- ing water surfaces at mean for 62-yr. period, 1860-1921	depths of acts of Congress standard low water	Feet	Feet	1921 annual mean	1921 annual lowest mean	at 1911 navigation season mean low		Feet	Feet
308	St. Clair Flats Canal.....	20.00	22.32	21.70	*20.73	*20.87	*20.39		
319	Livingston Channel.....	21.00	23.52	23.31	22.33	22.47	21.99		
Harbors									
Lake									
75	Duluth, Minn.....	20.00	21.79	21.63	21.00	21.28	20.43		
68	Ashtland, Wis.....	20.00	21.79	21.63	21.00	21.28	20.43		
165	Milwaukee, Wis.....	19.00	21.63	20.60	20.10	20.23	19.87		
206	Calumet, Ill.....	21.00	23.63	22.60	22.10	22.23	21.87		
210	Indiana Harbor, Ind....	21.00	23.63	22.60	22.10	22.23	21.87		
316	Rouge River, Mich.....	21.00	23.52	23.31	22.33	22.47	21.99		
375	Toledo, Ohio.....	21.00	23.52	23.31	22.33	22.47	21.99		
303	Huron, Ohio.....	19.00	21.52	21.31	20.33	20.47	19.99		

365	Lorain, Ohio.....	Erie.....	20.00	22.52	22.31	21.33	21.47	20.99
367	Cleveland, Ohio.....	Erie.....	23.00	25.52	25.31	24.33	24.47	23.99
368	Fairport, Ohio.....	Erie.....	19.00	21.52	21.31	20.33	20.47	19.99
371	Ashtabula, Ohio.....	Erie.....	20.00	22.52	22.31	21.33	21.47	20.99
349	Conneaut, Ohio.....	Erie.....	20.00	22.52	22.31	21.33	21.47	20.99
345	Erie, Pa.....	Erie.....	20.00	22.52	22.31	21.33	21.47	20.99
326	Buffalo, N. Y.....	Erie.....	21.00	23.52	23.31	22.33	21.47	20.99

Elevations

123	Lake Michigan.....	578.50	581.13	580.10	579.60	579.73	579.37
323	Lake Erie.....	570.00	572.52	572.31	*571.33	*571.47	*570.99
45	Lake Superior.....	600.50	602.29	602.13	601.50	601.78	600.95

NOTE.—Gages—Duluth—Milwaukee—Head of Detroit River—Cleveland.
1911—Lake Erie—Shenahan tables free flow less 10,000 C. S. F. Gage .14 foot higher.

1911—St. Clair Flats canal interpolated.

[fol. 464]

CHRISTIE Ex. 4—Apr. 26/23

Summary of Statement of Resources and Expenditures of the
Sanitary District of Chicago under 1922-1945 Construction
Program

Based Upon Plants Going Into Operation as Follows, viz:

Desplaines	1923
Calumet	1923
Corn Products.....	1927
North Side.....	1928
Stock Yards.....	1932
West Side.....	1940
South West Side.....	1945

Resources:

Taxes—Net	\$211,850,000	
Sale of bonds—Net.....	60,949,000	
	<hr/>	\$272,799,000

Contra:

New Construction.....	\$106,300,000	
Ad. Maintenance & Operation.....	106,400,000	
Interest on Bonds.....	59,768,880	
Surplus	330,120	
	<hr/>	\$272,799,000
		<hr/>

NOTE.—Bonds outstanding Jan. 2, 1946.....	\$84,050,000
Maximum bonding capacity Jan. 2, 1946.....	99,000,000

H. M. C. *G.

(1698)